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NOTICES.—All communications relating to editorial matter should be addressed to the Editor, who will be pleased to consider articles or contributions dealing with modern chemical developments or suggestions bearing upon the advancement of the chemical industry in this country. Communications relating to advertisements or general matters should be addressed to the Manager.

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Census of Chemical Production

THE third Census of Production of the United Kingdom just published relates to the year 1924, and takes, of course, no account of the remarkable changes and developments in the period since that date. The volume of particular interest to our readers is that concerned with the chemical and allied trades, the leather, rubber and canvas goods trades, the paper, printing, and allied trades, and miscellaneous trades. This is published at 7s. by H.M. Stationery Office. The chemical and allied trades group includes chemicals, dyestuffs and dyes; coke and by-products; seed crushing; oil and tallow; fertilisers, glues, sheep dips, and disinfectants; soaps, candles and perfumeries; starch, blue, and polishes; paints, colours, and varnishes; explosives and fireworks; matches; and ink, gum, and sealing wax. The most it is possible to do is to indicate some of the more notable figures to be found in this exhaustive survey.

The number of separate returns received from firms engaged in the chemical and allied trades group in 1924 was 3,444. About 360 firms to which schedules were sent did not present returns, but the great majority of these had very small establishments. The greatest output (i.e., selling value of goods made and value of work done) of chemicals, dyestuffs, and drugs in 1924 was £56,204,000; the cost of materials used and amount paid to other firms for work given out amounted to £30,779,000. The net output was £25,425,000, the number of persons employed, except outworkers, 69,245, and the net output per person employed £367. This is much the largest unit in the whole group. The figures relating to coke and by-products were: gross output £24,539,000; cost of materials used £19,481,000; net output £5,058,000; persons employed 18,739, and net output per person £270. The corresponding figures for paints, colours and varnish were gross output £17,950,000; cost of materials £9,872,000; net output £8,078,000; persons employed 19,822, and net output per person employed £408. For the whole of the group the total output was £226,847,000; cost of materials £149,281,000; net output £77,566,000; persons employed 207,121, and net output per person £375.

It is interesting to note, as compared with the records of 1907, the very large increase in the net output per person employed. For example, in the chemicals, dyestuffs and drugs section, the figure advanced from £183 in 1907 to £367 in 1924, while in the coke and by-products section the figure declined from £273 to £270. The largest increase in individual output was in the match industry. In 1907 it was £96 per head; in 1924 it had risen as high as £672 per head. Taking all the trades within the chemical and allied group, the increase was from £179 in 1907 to £375 in 1924.

In the matter of employment, there was an increase in chemical, dyestuffs and drugs works from £52,257 in 1907 to 69,245 in 1924. The operatives in the last year numbered 47,741 males and 9,513 females, while in the administrative, technical, salaried, and clerical staff there were 8,699 males and 3,292 females. In the coke and by-products section, the total number employed increased from 10,958 in the earlier year to 18,739 in 1924, while in the paint, colour, and varnish section the increase was from 13,840 to 19,822. The increase over all sections of the group was from 155,641 employed persons to 207,121.

The figures relating to wages show that wages varied from 13.9 to 45.2 per cent. of net output. In the chemicals, dyestuffs and drugs section, the total amount paid in wages in 1924 was £5,402,000, representing a proportion of net output of 35 per cent. The figures for the remaining branches of the group are as follows: Coke and by-products, wages paid £867,000, percentage of net output 43.2; seed-crushing £1,728,000, percentage 45.2; oil and tallow £1,112,000, percentage 29.8; fertilisers, glues, etc., £548,000, percentage 36.1; soap, candle and perfumery £1,953,000, percentage 21; starch, blue and polishes £579,000, percentage 19.2; paints, colours and varnish £942,000, percentage 23.6; explosives and fireworks

£627,000, percentage 27; matches £474,000, percentage 13.9; ink, gum and sealing wax £211,000, percentage 18.3; total for the whole group £14,443,000, percentage 29.1.

The Future of Hydrogenation

THE very large audience at Dr. Armstrong's lecture before the Institute of Chemical Engineers were given a serious and scholarly survey of a very wide and important field of enterprise, in which chemical engineering has played a predominant part. The lecturer, who gave only a précis of what was evidently a lengthy manuscript, divided his subject into three parts, namely, a general statement of hydrogenation in practice, particularly of fats and other organic compounds, a summary of the theory underlying the subject, and a practical account of the manufacture of hydrogen, both in small and in very large quantities. The magnitude of the whale fishing industry to-day and the fact that the population of the United States consume 10 lbs. per head more vegetable fats than they did 30 years ago, are evidence of what the single discovery of hydrogenation has brought about.

What the future holds in store as the result of the addition of hydrogen to oil or coal is still hidden from us, much depending on the production of cheap hydrogen. Dr. Armstrong's survey of this subject was particularly interesting, and he brought forward new facts for consideration in his statement as to the relative cost of carbon from various sources per 1,000 cubic feet of hydrogen. Little more than a year ago Colonel Pollitt considered water gas to be the future most economic source of hydrogen, but Dr. Armstrong's inclination seemed to be in favour of coke oven gas, though he did not rule out the possibility of improvements, both technical and economic, in the electrolytic method. Dr. Armstrong touched only lightly on the theoretical aspect of catalytic hydrogenation which his own researches have done so much to illuminate, but we understand that this will receive adequate treatment in the paper when published. The paper was given on a serious and non-controversial note and was regarded by many listeners as a definite contribution to scientific and technical progress.

A Hinchley Memorial Lecture

THE late Professor Hinchley's work for chemical engineering more than entitles his memory to be preserved in the branch of science to which he gave so generously of his time, interest, and labour. Dr. E. F. Armstrong's suggestion that the memorial might take the form of a biennial Hinchley lecture will commend itself to many, though possibly there may be other suggestions under consideration. What is important is that the idea of a memorial should not be allowed to drop out. In these furious days, suggestions that are not acted upon fairly quickly are in peril of fading away, and it seems desirable that definite steps should be desirable to ensure that that does not happen in the case of the late Professor Hinchley. He was essentially a creative organiser, and such men deserve commemoration.

In this field of organisation the United States has just lost a super-organiser in the death of Dr. Stratton, who after over twenty years' work as Director of the Bureau of Standards at Washington, went to Boston as head of the famous Boston "Tech." Those who see the buildings of the Bureau of Standards never fail to be impressed by their size and magnificence, and Dr. Stratton's memorial will remain there. The first visit we paid to the Bureau was just when Dr. Stratton's removal from Washington for Boston was contemplated. He recognised, as he was bound to do, that he had done a great work at the Bureau, but admitted the attraction of taking on the administration of the Massachusetts Institute of Technology. There were financial advantages in the change, but what appealed to him was the prospect of a new field for his great organising and administrative gifts.

A Six-Hour Chemical Shift

THE Manufacturing Chemists' Association of the United States are reported to have adopted the six-hour shift as a means of spreading employment over a larger number of chemical workers and to that extent modifying the difficulties caused by unemployment. This step was decided on after a meeting with President Hoover, who has long taken a friendly interest in chemical industry affairs. It is estimated that this policy may result in distributing work among about a third more workers in chemical plants, and that the example is likely to be followed in other industries. Nothing is said of the terms on which the change is being made, but the general idea is to pool the available work among the largest possible number of workmen. "Making the work go round" is a familiar doctrine in this country, but instead of being effected by limitation of output the American plan is to do it by limitation of hours. Two workmen, instead of being employed full time, will each sacrifice enough of their work to keep a third man going. It sounds a more neighbourly way of meeting the case than retaining their full hours and wages, not having the latter taxed for the maintenance of the third unemployed man.

Books Received

ECONOMIC CONDITIONS IN THE CANARY ISLANDS, August, 1931. Report by John P. Trant, Department of Overseas Trade. London: H.M. Stationery Office. Pp. 50. 1s. 9d.

FOUNDATIONS AND METHODS OF CHEMICAL ANALYSIS BY THE EMISSION SPECTRUM. By Dr. W. Gerlach and Dr. Eugen Schweitzer. London: Adam Hilger, Ltd., Pp. 123. 12s. 6d.

QUANTITATIVE CHEMICAL ANALYSIS. By Henry P. Talbot. London and New York: Macmillan and Co., Ltd., Pp. 254. 12s. 6d.

THE PRACTICE OF SPECTRUM ANALYSIS WITH HILGER INSTRUMENTS. Compiled by F. Twyman. London: Adam Hilger, Ltd. Pp. 54. 3s. 6d.

The Calendar

Nov.	9	London "Safety First" Council: "Industrial Accident Prevention." John Gregorson. 7 p.m.	Institution of Mechanical Engineers, London.
	9	Institute of Metals (Scottish Section): "Experiences with Some Electric Furnaces for Melting Copper and Copper Alloys." W. L. Govier. 7.30 p.m.	39, Elmbank Crescent, Glasgow.
	9	Institution of the Rubber Industry: "The Direct Use of Latex in the Manufacture of Rubber Products." Professor G. Bruni. 7.30 p.m.	First Avenue Hotel, London.

Dr. Armstrong on Hydrogenation

The Trend of Developments

The following extracts are from Dr. E. F. Armstrong's public lecture delivered to the Institution of Chemical Engineers, on Friday, October 30, when Mr. W. A. S. Calder, President of the Institution, presided.

THE successful technical hydrogenation of fats dated from the time of the Normann patent, E.P. 1515/1903 for the hydrogenation of unsaturated fats in the liquid state. As was inevitable, Normann met with very many difficulties in developing his process and it was not until it was acquired by Joseph Crosfield and Sons, of Warrington, that it was developed, with the assistance of Dr. Normann to a practical process. Crosfields spent some £80,000 in working out the process, which in those days was a considerable sum for a small firm. The commercial advantage of the process, however, was based on the fact that at the time of its invention the difference between the market price of tallow, on the one hand, and of whale and certain other liquid oils on the other, was of the order of £15 to £25 per ton and there was every indication that the world demand for hard oils was likely to exceed the supply. The total cost of hardening was estimated to be of the order of £3 per ton so that the margin was very big.

As was so often the case, however, economic changes of another kind came in to affect the position adversely and the final net result had been that the fat hardening industry served to maintain a more or less even balance between the costs of soft and hard fats. As an industry it was firmly established and was increasing as, on the one hand technical processes were improving both the quality and the cost of the hardened products whilst on the other hand older prejudices against their use were dying away and new and special applications were being found for hardened fats. One of the results of hardening fats in America—and no doubt elsewhere—had been an increase of 10 lb. per capita in the consumption of vegetable oils, which had been officially commented upon as one of the most striking changes in food consumption that had taken place during the last 30 years. This was due to their use, when hardened, in the manufacture of shortening compounds and margarines and also to the improvement in quality.

Hydrogenation Applied to Oils

Besides whale and fish oil, the usual oils hydrogenated were linseed, soya bean, cotton seed and sometimes arachis. The plant used was standard practice and there was little, if any, of special design. It was usually operated continuously in the sense that the plant worked for 24 hours per day; indeed, a large plant could not be operated intermittently with economy. The actual hydrogenation was carried out in batches of several tons at a time. For smaller plants particularly for edible oils it would appear that the cheapest to build and operate is the form in which the catalyst is contained in cages and is prepared by electrolytic reduction of a film of oxide on a metal surface.

Hydrogenation of other organic substances than the fats (such as acetaldehyde, crotonaldehyde, acetone naphthalene, nitrobenzene, phenol, pyridine, furfural and indigo) was being practised to an increasing extent on a technical scale and it would undoubtedly be extended in the future. Action was carried out either in the liquid phase in presence of a catalyst with stirring, or by passage of the vapour of the substance over the heated catalyst. A feature, however, of the process was the necessity for maintaining the temperature of the reaction within narrow limits and to reduce the time of contact to minimise secondary reactions; in fact, each hydrogenation was a problem of its own in chemical engineering.

The Technique of the Process

In the Bolton and Lush continuous process in which the catalyst, which consists of nickel wool, turnings or wire is made up into cartridge-like cases which slip in and out of the hydrogenation vessel, the active catalyst—a film of reduced nickel oxide—is produced at the surface of the nickel pieces by an anodic oxidation and subsequent reduction. A constant iodine value is ensured in practice by having four pots of catalyst in series and by slowly raising the temperature or increasing the hydrogen pressure as the catalyst activity decreases. The spent catalyst acts as a poison absorber so that it is economical to use several tubes in series. The advantage of this in practice is considerable. Under some conditions a nickel catalyst is very sensitive to sulphur. For example, the very small quantity of sulphur introduced by the presence of a very little mineral oil in whale oil, due to carrying the animal oil in tanks which had previously contained mineral oil, is said to so lower the rate of reaction as to necessitate using more catalyst in the ordinary powder method where very small quantities of highly active supported or powder catalyst are used.

In actual working the oil is forced by hydrogen pressure from a reservoir through an exit at the top, and after passing through a sight gauge it is met by a stream of hydrogen which is intimately mixed with it in its passage up and down through the four vertical reaction vessels, containing the catalyst. The oil thence passes into a separator from which the hydrogenated oil passes by gravity to a cooling coil and is collected ready for use, whilst the unused hydrogen is returned by a pump to the system. By altering the speed of flow, any desired degree of fat hardening can be achieved. The exact control of the temperature of reduction of the nickel oxide is important as this leads to the production of a standardised catalyst with a definite hydrogen activating capacity. This method is unique in that it has a quantity of active catalyst which is large in relation to the oil film which is moving down it; the nickel always activates the same amount of hydrogen irrespective of the organic substance which is being changed.

Hydrogenation of Coal

The hydrogenation of coal may be said to date from the investigation of the famous French scientist, Berthelot, who some 50 years ago used concentrated hydriodic acid under pressure, but it was not until 1913 that Bergius made the announcement that at a pressure of 200 atmospheres and a temperature of from 400° to 500° C. he had succeeded in converting coal into a tar-like oil with a yield of about 50 per cent. Even since then the possibility of obtaining oil from coal had achieved greater attention. The great question of the production of oil from coal, however, carried with it the subsidiary problem of how to convert the primary tar oil into a product more closely akin to petrol. This problem was not insoluble. Cracking and catalytic hydrogenation were two ways which promised success but each and any treatment of oil added to the cost of the final product which, at the moment, has to compete with a refined natural oil ready for use delivered in bulk to any part in Britain at a cost of 2d. per gallon or less. The tendency during the last few years in Germany had been first to extract the oil from brown coal by a low temperature carbonisation process and then to hydrogenate it by a modified Bergius process.

The formation of an international pool, including Imperial Chemical Industries, to hold the many patents in this field and to explore and exploit it technically, had caused the very greatest interest. When the I.G. joined forces with the Standard Oil Co. of New Jersey, the efforts of the experts in catalytic chemistry were supplemented by the experience of those conversant with handling oil, and a 100 barrels per day pilot plant was erected. The hydrogen, which need not be sulphur free, might be made by the treatment of hydrocarbons with steam, plentiful supplies of refinery and natural gas being available. The action was carried out at 3,000 to 4,000 lbs. per inch pressure at temperatures in excess of 900° F., the degree of hydrogenation being controlled either by alteration of catalyst or of operating conditions, according to the results desired. Metal oxides or mixtures of oxides were used as catalysts. The process was practically continuous and long runs had been made.

The Nature of the Catalyst

Instancing a few applications of individual catalysts to illustrate what is being suggested for use in oil and coal hydrogenation, Dr. Armstrong mentioned the researches of Prof. G. T. Morgan who, working with a low temperature tar topped at 200°, used molybdic acid and sulphur as catalyst and a pressure of 120-200 atmospheres. As catalysts for coal hydrogenation, the I.G. have patented oxides of iron, cobalt or nickel containing 0.4 to 0.6 per cent. of alkali, whilst for use at elevated temperatures and high pressures, catalysts containing a mixture of copper and zinc or cadmium, the remainder consisting of boron, aluminium, silicon, vanadium or their compounds had been patented. Taylor, of New Jersey, claimed that oxides are to be preferred to metallic catalysts on account of the action of sulphur poisons on the metals, whilst Tyrer had suggested passing a hydrocarbon mixture through molten iron, with carbon liberated being subsequently removed by blowing with air.

We have progressed as the result of much experimental work, a good deal farther than the original conception of a catalyst as a sponge-like surface. It had been shown that catalytic activity is a function of definite particles, if not of individual atom. Of a mass of particles of nickel, each one either is, or is not, able to act as a catalyst. An assemblage of particles each of which is at some point between inactivity and full activity was not admitted, and Taylor has put forward a conception of the atomic condition of an active catalyst based on the fact that, as shown by X-Ray examination, the metallic hydrogenating catalysts possess the definite lattice structure of the crystalline material, and he had made a definite step forward in suggesting that the structure of a typical catalyst surface might have atoms thrust irregularly above the normal surface of the metal. The net result of the extension of our knowledge by the work of Taylor, Armstrong and Hilditch and others was, that we now look upon certain selected atoms in the mass of a catalyst as the centres in which the activity resides; the properties of the catalyst are to be sharply differentiated from the bulk properties of the substance.

Manufacture of Hydrogen

Methods of hydrogen manufacture come under four heads: (1) Electrolytic; (2) from water gas by the steam-iron process; (3) from water gas by the catalytic process; (4) from coke oven or water gas by the Linde process, and (5) from methane. Whenever pure hydrogen is required, or hydrogen in small quantities or even in large quantities in localities where electric power is cheap, its production by electrolysis of 18 to 20 per cent. caustic soda or of 25 to 30 per cent. caustic potash solutions is the method chosen. As the potash electrolyte is more costly and the diaphragms and insulators not so durable, it is usually preferable to use caustic soda. For small quantities, often estimated at under 3,000 cub. ft. per hour, electrolytic hydrogen is undoubtedly cheaper than that produced by any other method.

Modern electrolytic plant may be broadly divided into two types—filter press and collecting bell cells. The chief advantages claimed for the former are low first cost and the small floor space required, but they present many difficulties in design. The bell type is represented by the well known Knowles cell of the International Electrolytic Plant Co., whose first plant was set to work at Bromborough in 1912 and remained for many years the world's largest unit battery. Since then, the firm has successfully built many large units and this British concern holds the field. The theoretical production per 1,000 ampere-hours is 16.25 cub. ft. of hydrogen measured wet at 20° C., and 760 m/m. The guaranteed figures for a Knowles cell under these conditions are—output 161.4 cub. ft. of hydrogen, an efficiency of 140 kW-hour per 1,000 cub. ft. The guaranteed purity is 99.0 oxygen and 99.5 hydrogen. In practice with ordinary care 99.6-99.8 per cent. oxygen and 99.8 to 100 per cent. hydrogen can be regularly obtained. A cell to pass a given current at 2 volts will require three times the electrode area of one to pass the same current at 2.5 volts. The capital cost of an electrolytic plant, therefore, is lowest when the cells are run at minimum output but then the efficiency is lowest and the cost of electricity at a maximum.

Cost of Electrolytic Hydrogen

The cost of producing electrolytic hydrogen can be decreased only by reducing the current consumption per cubic metre of hydrogen, this obtaining the maximum output from the electrolyser unit. The larger the capacity of the electrolyser the smaller are the plant costs calculated per cub. metre of hydrogen produced and as the life of an electrolyser depends upon the material used in its construction, attention has been paid to developing an electrolyser with a long life. Some years ago it was generally considered that only metal diaphragms could be used for electrilytic cells but recently doubts have arisen on this point which appear to be justified. It has been found that as far as gas purity is concerned, asbestos diaphragms are superior provided that their only disadvantage, i.e., low mechanical strengths, can be removed. The "Bamag-Meguin" patented asbestos metallic diaphram is a weave consisting of mechanically pure asbestos threads with a thin core of polished stainless steel. This metal core gives a high mechanical solidity to the asbestos weave so that a diaphragm of almost unlimited life is obtained.

The lowest cost of the off-peak load for electric power is variously given as 0.2 to 0.1 pence per kW-hour. This applies to those cases where the electrolytic plant is near a town but as a rule this is not so. Therefore, should the demand for hydogen grow to large proportions, serious thought may have to be given to linking up its production with the electricity wasted at any time during the day in power stations and under such conditions the cost of electricity would be negligible.

With regard to the steam-iron process—a two-stage reaction in which water gas is first used to reduce iron oxide to iron, and then hot iron is treated with steam, whereupon hydrogen and iron oxide are formed—efficiency depends upon it being in the hands of competent workmen and upon the maximum concentration of heat. Usually it gives a yield of from 40 to 50 per cent. of the water gas used, as hydrogen, and the cost of hydrogen so produced is approximately three times that of water gas. The process is non-economic in small units and only reaches its maximum economy in units of medium size. Of the water catalytic process which consists in the alternate passage of air and steam over coke there is still much to learn about the making of water gas particularly in regard to the reactivity of coke in catalysing the reaction between steam and carbon.

Hydrogen from Coke Oven Gas

The development of such ammonia processes as the "Mont Cenis," has brought with it further economies in hydrogen production, particularly in that the ammonia plants are built in conjunction with the coking plants with the object of using the coke oven gas, from which the hydrogen is separated by the Bronn-Linde or the Claude systems. The gas is compressed in two-stage compressors to 12 atmospheres pressure and washed with water under pressure to remove all but about 0.3 per cent. of CO_2, of which the last traces are taken out in a final washing with caustic soda. It is then fractionally cooled whereby first the unsaturated hydrocarbons, then the methane and finally the carbon monoxide is removed. The last traces of carbon monoxide are removed in a washing column at 190° by irrigation with liquid nitrogen. The yield of hydrogen based on that present in the coke oven gas is about 92 per cent. It is of satisfactory purity, the CO amounting to 0.02 per cent. by volume at the most. The cost by this process, taking power at 1.9 pfennigs per kW-hour and coke oven gas at 1.3 pfennigs per cub. metre (7d. per 1,000 cub. ft.) has been stated to work out to about 10¼d. per 1,000 cub. ft., this cost including all charges for chemicals, water, wages and repairs.

Present Trend of Development

In attempting to give a comparison of the merits of the various sources of hydrogen manufactured on a large scale, Dr. Armstrong said the trend of events is clearly indicated by some figures given by Col. Pollitt of the I.C.I., in his paper before the World Power Conference in Berlin last year. These show that the percentage of hydrogen made by the water gas method is falling, that from coke oven gas is rising, whilst that made by the electrolytic process remains stationary. Col. Pollitt does not regard electrolytic hydrogen as a permanently serious competitor to hydrogen from coal.

The I.G. at first tried the Linde method; later they produced gas and water mixed in the proportions to give ammonia, passing it over the Bosch catalyst with steam. Carbon dioxide was washed out, and subsequently recovered and used, and CO and sulphur were also removed. This method has also been so far improved that the steam consumption, for example, has been reduced to less than half the quantity originally required. The I.G. has examined a number of rival schemes of hydrogenation, particularly the electrolytic, but has found the latter too expensive with electricity at the prices at which it can be obtained in Bavaria or Norway. More recently, however, the I.G. has worked out a still cheaper process in which water gas is made from crude brown coal. The principle of this is that a 6 ft. layer of finely divided brown coal is put at the bottom of a producer and kept constantly in motion by an air or steam blast. The mixed gases formed leave the producer at about 1,000° F., and their sensible heat is used to dry the raw coal. The escaping gas is then cooled to about 250° F., and undergoes the usual purification.

Dr. Armstrong concluded by saying that it sometimes appears as if the industries connected with coal have been contented in their prosperous days to work only in watertight compartments. The collieries were concerned only to mine and sell coal, paying no attention to use or quality. The gas companies made gas and a tar, coke being regarded merely as an accessory product or necessary evil. The coke oven people thought only in terms of metallurgical coke, neglecting gas and by-products. The tar distiller knew how to fractionate along orthodox lines but never developed the hidden potentialities of their raw material. This state of affairs must change in the future. The collieries could at least give us clean coal, selected for the particular purposes for which it is to serve. The gas industry was taking pains with its coke; coke ovens would some day turn their gas into ring mains; the tar distiller must discover how to turn his cresol fraction into Diesel oil. Transport conditions alone would appear to dictate the location of low temperature carbonisation, oil or coal hydrogenation or ammonia plants at a colliery, provided transportation costs did not press too heavily on the products. But if a chain of operations from coke to coal, and oil, and thence to hydrogen, ammonia and petrol was contemplated, the colliery was the site for the factory, and the gas produced could be piped to a ring main system feeding the district generally.

A cordial vote of thanks was passed to Dr. Armstrong at the conclusion of the lecture, on the motion of the President (Mr. W. A. S. Calder).

British Industries Federation

Report on Monetary Policy and Finance

In the report on Empire Monetary Policy and Finance, prepared by a special committee appointed by the Federation of British Industries it is stated that the breakdown of the post-war international Gold Standard has raised issues vital to the future well-being of British industry. Can it be re-built? Or must we start afresh on a new basis? The precipitate return to a Gold Standard in 1925 was made despite industry's plea that it could not work without international co-operation, and stable world conditions. The disasters to British industry then foretold have been realised. In the view of the Macmillan Committee that policy provided "the major part of the explanation of the adverse change in our costs of production compared with elsewhere." As to the benefits to international finance which were alleged to be the main justification for that precipitancy it says that it is not likely that those benefits have "gone even a fraction of the way towards compensating the losses of wealth through unemployment in recent years."

That mistake must not be repeated. No steps must be taken to return to an international standard until we can be assured, beyond a peradventure, that it will both serve the needs of Great Britain and the Empire and, that its rules will be loyally observed by the other countries of the world.

Recommendations.

1. An Empire Conference should be summoned to examine the practibility of establishing a stable Empire currency system to link together the financial policies of constituent members of the British Empire on a basis of free co-operation.

2. The British Government should summon, or agree to attend, an immediate International Confernce on silver, with a view to considering the possibilities of the restoration of silver to a place in the world's monetary system.

3. Preferential inducements should be afforded to the flow of capital into Empire rather than foreign investments, as part of a general Imperial policy.

In the Appendices proposals are discussed for obviating certain political difficulties in connction with the application of the Colonial Stock Act, and suggestions made for preferential differentiation in the various stamp duties imposed on securities.

Artificial Silk Fumes

Sequestration Writ Suspended

In the Chancery Division on October 30, Mr. Justice Glauson had before him an application by the Rayon Manufacturing Co. (1927), Ltd., asking that the writ of sequestration granted in an action against them by the Attorney General at the relation of the Epsom Urban District Council, should continue to lie in the office until January 31, 1932.

The action was before the Court in July last and was for an injunction to restrain what was alleged to be a public nuisance caused by fumes from defendants' artificial silk factory. It was not disputed that the defendants had spent a large sum of money in attempting to abate the nuisance alleged. His lordship decided in favour of the plaintiffs, and directed the issue of a writ of sequestration against the defendants, but ordered that it should lie in the office until January 31, if within ten days they paid into Court £1,500 as security for payment of the plaintiffs' costs. This sum had been paid in within ten days.

Mr. Heckscher for the Company now said that his clients had done all they could to improve matter and had met with a great measure of success. The plaintiffs now assented to the motion.

For the plaintiffs, it was stated that they consented to the application and the Attorney General did not object.

His lordship directed the writ of sequestration to lie in the office till January 31, 1932.

Castleford Chemical Explosion

Trust Awards to Chemists

Three heroes of the disaster at the chemical works of Hickson and Partners, Castleford, Yorkshire, in which thirteen people were killed last July, received recognition on Friday, October 29, when awards were made to them by the Carnegie Hero Fund Trustees at Dunfermline. They were George Herbert Frank, chemical works director and manager, of Hotton Cross Road, Cheshire; Thomas Lawrenson, works chemist, of Medley Street, Castleford; and John G. Carr, process worker, of Smawthorne Grove, Castleford.

Although the explosion had ignited inflammable material in other parts of the works and further explosions were feared, Frank, assisted by Lawrenson and Carr, led a party through the strong nitrous fumes in search of the victims. Frank, who had been awarded the Edward Medal by the King, was awarded an inscribed gold watch or other article of the value of £25. Lawrenson and Carr were each awarded an honorary certificate and £10.

The late Prof. Hinchley

Suggested Biennial Memorial Lecture

In opening his public lecture on "Hydrogenation" before the Institution of Chemical Engineers, on Friday, October 30, Dr. E. F. Armstrong referred to the death of the late professor Hinchley who had been honorary secretary of the Institution since its inauguration. Although full tribute had already been paid to Professor Hinchley's achievements and personality, he said he felt the gap left by the passing of Professor Hinchley so strongly that he was moved to express the hope that it would be possible to devise some form of memorial that would both keep the memory of the late Professor evergreen to his friends, and also take a form which would enable his life work to be used as a precept and encouragement to junior colleagues. He (Dr. Armstrong) therefore suggested that perhaps a biennial lecture in memory of Professor Hinchley might be an appropriate way of commemorating the work he had done.

Public Economy and Private Spending

A Broadcast talk by Sir Ernest Benn

In a broadcast talk on "Public Economy" from the National Station at Savoy Hill on Monday, Sir Ernest Benn said:—

"I will give you a few samples of the hundreds of questions into which I suggest you ought to inquire. You and I want to see the slums abolished and decent houses provided for the poor. We have already spent 1,000 milions in pursuit of this object. Why have we been charged twice as much for housing the poor as it used to cost to house the rich? How many slums have we abolished? How many comparatively well-to-do people, with more influence than you and I, live in council houses for which you and I have paid. Was that our intention when we decided to spend all this money? Are we achieving our object or is there anything wrong with our methods?

"A second sample question. Your contribution to health and unemployment insurance, together with the contributions of your employer and the State, amounts to 4s. a week. That is the money which is actually paid week by week on your personal account. What benefits would the old-fashioned Friendly Society have offered you for the sum of 4s. a week? Do you think you are getting all the value that you might for this money? Is the State machine the best way of doing this job?

"A third subject for inquiry. Do you really want beautiful roads with surfaces like billiard tables all over the North of Scotland and everywhere else, and if we want them can we afford to withdraw money from trade and industry for such a luxury? A good road is nice for the motorist, but the unemployed walking on it will hardly feel the same satisfaction if the expense of it has contributed to ruining the trade in which he ought to be working.

"With the public funds, which belong to you, you employ many thousands of civil servants—your servants. Are you happy to be working hard from 9 to 6, and to know that some of your servants are working from 10 to 5?

"I want to make it clear that I am talking about public economy and not private economy. The foreigner has not lost confidence in the ability of the individual to manage his own money in his own way. It is when he looks at our public budget and sees nearly half our wealth in one account without any personal responsibility behind it that his confidence weakens.

"The man whose income is as good as ever, and who goes home and talks economy, when the wife wants a new dress or an evening at the pictures, is a miser and not an economist. He is merely spoiling trade. So many of us are worse off and really have to economise that it almost amounts to a duty on those who can to spend, if anything, a little more than they used to, to help trade.

"Slogans and catchwords are apt to express no more than a portion of the truth, but if in these days of doctors' mandates I were asked to give a prescription that would restore us to economic health, I would put it in seven words—"Rigid Public Economy and Wise Private Spending.

"My last point is one about which there can be no argument. We must give up the habit of spending capital as income. If a man or a State takes a pound out of his income and adds it to his capital, he is going up the economic scale. But if a pound is taken from capital and spent as income, he is by that much poorer. He commits the worst economic crime. And yet as a nation we are perpetrating that crime every day."

F.B.I. Trade Forecast

TEMPERED optimism is the keynote of the F.B.I. Trade Forecast in the *Business Barometer* issued this week. The problem of the future of the Gold Standard is discussed, and emphasis laid on the importance of consulting industry before any decision is taken. As far back as 1924 the F.B.I. publicly warned both the Government and the Bank of England of the dangers to industry of precipitate action, foreshadowing in considerable detail most of the disasters which subsequently overtook industry as a result of the readoption of the Gold Standard. The *Business Barometer* examines the present world position, and outlines a monetary policy which would be suitable to British industry, including Empire co-operation on currency and financial matters.

The British Industries Fair

Inquiries Pouring in from Abroad

THE increased eagerness of overseas countries to buy British goods is indicated by inquiries that are being received daily at the offices of the British Industries Fair in London and Birmingham. By the end of October, overseas trade buyers who had informed the Department of Overseas Trade of their intention of visiting the Fair numbered 684, as compared with 354 at the same time last year, and it was stated that the majority of them were newcomers. Over 100 more had instructed their United Kingdom agents to represent them.

The Birmingham inquiries, which come from 20 countries already, are chiefly the result of a new card index—a sort of "Buyers' A.B.C. Guide" or "Sales Help Index"—which already contains the names of some 10,000 articles manufactured by firms which will exhibit in the Fair at Castle Bromwich next February—whether these articles are all manufactured or not. The index thus supplements the catalogue, which is confined to goods actually exhibited, and it will displace the advance catalogue for the Birmingham sections. The advance catalogue will be published as usual.

The new index will be kept for reference in the Fair offices and the procedure is that buyers are being asked to write on a postcard the names of the articles in which they are interested. They are then supplied at once with the names of all exhibiting firms making these articles. The index, which has taken five months to compile so far, will be continually added to and it is expected that it will soon cover 20,000 to 30,000 articles. It is supplemented by an index to trade names.

Holland, as usual, heads the list of prospective buyers at the Fair with France, Canada, Denmark, Spain, Germany and Switzerland following on. There are also numerous replies from Poland, Italy and the Irish Free State, and a few from countries so far away as China, Japan, Dutch East Indies, Portuguese East Africa, Siam, Australia and New Zealand.

At Olympia the space let up to October 30 was 264,000 square feet out of a total of 300,000. Only 12 stands remained un-let out of a total of 220 in the textiles section at the White City and the halls allotted for the wholesale houses in this section were absolutely full. At Castle Bromwich, Birmingham, over 85 per cent. of the space was let.

The Economics of Oil from Coal

Address to the Oil Industries Club

IN an address to members of the Oil Industries Club on Tuesday, November 3, Mr. K. Gordon, who is in charge of the large experimental hydrogenation plant of Imperial Chemical Industries at Billingham, suggested that the development of the hydrogenation industry of this country would have a chastening effect on the price of imported oil. In addition, he said, it would help us to restore the trade balance and give us additional security in case of war.

By the hydrogenation process the overall yield of petrol obtainable from coal was 62 per cent. on the ash-free dry coal. To try out this process they had built at Billingham a plant treating 15 tons of coal a day, and this plant had now been operating for nearly two years. The estimate of the cost of petrol production by this means, including obsolescence but excluding retailers' profit and return on capital, was 7d. per gallon. Petrol produced at this price could be retailed at to-day's selling price at a reasonable margin of profit. This figure, of course, was based on production in a very much larger plant than they had at Billingham. The size selected for economic production was a unit producing 200,000 tons per year of petrol, which was eight per cent. of the present consumption, but as time went on, it would no doubt be found possible to reduce the cost of producing oil from coal, but there did not seem to be any hope of getting the cost down to the present day price of imported petrol at 2½d. per gallon as the coal required for the process—3½ tons per ton of petrol—alone would cost 2d. per gallon. From 1914 to 1926 the retail price of No. 1 spirit in this country was over 1s. 6d. per gallon—at which figure a coal hydrogenation plant could work, and make a good profit. If a coal hydrogenation plant was successful in keeping down the price of imported petrol by one penny per gallon, it would save consumers £3,500,000 a year.

Chemical Club Report

Appeal for New Members

THE report of the Executive Committee for the year 1930-31 states that the year, the twelfth of the Club's tenancy of its rooms at No. 2 Whitehall Court, has been marked by a very considerable use of the Club, not only by its members, but by visitors to whom hospitality was afforded during the meetings of the Jubilee of the Society of Chemical Industry, the Faraday Centenary, and the Chemical Section of the British Association. The figures of membership at August 31, 1931, were: Town 417, country 227, overseas 61—total 705, compared with a membership of 731 at August 31, 1930. The Committee regret to report an increase in resignations and a falling off in the number of applications for membership. Needless to say, every effort should be made by the members to repair this wastage. The Finance and House Committee under the chairmanship of Mr. W. H. Coleman, has completed the re-drafting of the rules. These have been printed and are ready for distribution to any members who apply for a copy.

Mr. J. F. Ronca retires as chairman and the sincere thanks of the Committee are recorded to him for his excellent work for the past two years. The Committee has nominated the following to serve as officers during the year 1931-2:—President, Dr. H. Levinstein (in succession to Professor Arthur Smithells); chairman, Mr. W. H. Coleman; hon. treasurer, Mr. F. A. Greene; hon. secretary, Mr. J. Davidson-Pratt. The following members of the Executive Committee retire:—Messrs. E. T. Brewis, Harley Knight, G. S. W. Marlow, G. T. Shipston, and are under the rules not eligible for re-election.

Owing to an unfortunate breakdown in health the Hon. Secretary, Mr. A. J. Chapman, has been compelled to relinquish his duties at the last moment. He has been untiring in his efforts for the good of the Club in general and the members in particular. The Committee record their very sincere appreciation of the great services which Mr. Chapman has rendered to the Club.

Acid Proof Aprons for Chemical Workers

TWO new types of acid-proof aprons are described in a leaflet of the St. Helens Cable and Rubber Co., Ltd., of Slough. The rubber impregnated fabric type is claimed to withstand the hardest wear and to resist the action of all acids and alkalis. The rubber compound with which these aprons are impregnated is of the well known "Cabtyrit" quality, which is already serving as an efficient acid-resisting lining for chemical plant. The outstanding feature of this apron is the provision of a drip channel fixed near the bottom in such manner that it collects splashed liquid and drains it to the back, thus protecting the worker's legs and feet. The second type is made entirely of extra thick, tough, flexible rubber, also of "Cabtyrit" quality, and is cut on rather different lines, so that it fits close to the body. Where there is the possibility of strain these aprons are reinforced with strong proofed canvas.

Price of Carrigeen

THE price of Carrigeen ("Irish Moss") in Ireland at the present time is 2s. 6d. per stone for first grade, 2s. per stone for second grade and about 6d. per stone for a grade suitable for industrial purposes. The export of Carrigeen to England and elsewhere is flourishing and it is understood that several large contracts have been arranged. Carrigeen for household purposes is marketed in cartons by the organisation set up by the Government for the commercial development of such natural resources.

Fatal Accident to Mr. W. A. S. Calder's Son

THROUGHOUT the chemical industry deep regret will be felt at the news of the death, as the result of a motor accident on Sunday evening, of Mr. Thomas Stuart Calder, aged 21, youngest son of Mr. W. A. S. Calder, President of the Institution of Chemical Engineers. Mr. Calder was fatally injured when the car he was driving along Ridgeway Drive, Enfield, ran into the ditch at a sharp curve and overturned.

Isolation of New Vitamin Compound

VITAMIN D has been isolated in a pure state at the laboratory of the Medical Research Council, Hampstead. Calciferol was described in scientific papers a short time ago, but further work has enabled a substance called pyrocalciferol to be separated from the original calciferol, in which it is really an impurity. The original calciferol, it is now announced, contained 30 to 50 per cent. of inactive material. This marks a victory for British science in the race with German experts. Professor Windaus, of Germany, recently announced that he had crystallised two vitamins, D and D2, but the British team have carried this work a stage further. They believe that calciferol may be the same as vitamin D2 and that the behaviour of the D vitamin may be due to the presence of impurities. Calciferol is extremely powerful and minute quantities are claimed to cure rickets in children. It is obtained by irradiating ergosterol, which is prepared commercially from yeast, but is also present in the skin. Vitamin D and ergosterol have the same chemical formulæ, but the atoms are arranged in reverse positions.

Sale of Cement Manufacturing Concerns

AT extraordinary meetings of the Dunstable Portland Cement Co., Ltd., Holborough Cement Co., Ltd. and Greaves, Bull and Lakin (Harbury Works), Ltd., held at Winchester House, London, October 30, resolutions were passed winding up the several companies voluntarily, and appointing Sir William McLintock as liquidator. The chairman, Mr. J. F. Cunningham, who presided, said the resolution was the outcome of a meeting approving the sale of the assets of the three companies to the Associated Portland Cement Manufacturers, Ltd. The sale was completed on October 22, and the money had been paid. The appointment of the liquidator was for the purpose of distributing the money to the shareholders. Preference shareholders should lodge their certificates with the liquidator before November 10.

Ruths Steam Storage, Ltd.

IN the Chancery Division on Monday, November 2, Mr. Justice Eve confirmed the reduction of the capital of Ruths Steam Storage, Ltd., from £500,000 to £282,635 10s. Mr. H. S. G. Buckmaster (instructed by Messrs. Pinsent and Co., Birmingham, solicitors to the company) stated that there were two classes of shares, but there was no difference between them except with regard to voting rights, and both classes were to be amalgamated. According to Counsel the company had subsidiaries in Canada and America, and they also were suffering from the trade depression. It was proposed to reduce the shares from £1 to 10s. The installations dealt with by the company were costly, and some customers hesitated before they embarked on them in consequence of which the company had had a net trading loss of £91,452.

I.C.I. Dividend and Tax

IT is stated that from the dividend of 3 per cent. on the Ordinary shares of the Imperial Chemical Industries, paid June 1, tax was deducted at 4s. 6d. The directors have decided to adjust this under-deduction on the occasion of the payment on December 1 next of the interim dividend of 1½ per cent. The adjustment will thus represent a reduction of 1s. in the £, in addition to the standard rate already intimated as being deducted.

Exchange Restriction in Greece

ACCORDING to telegraphic advice, decrees have been issued in Greece for the regulation of exchange transactions. The Bank of Greece is reported to be refusing to grant foreign exchange merchants in respect of new orders for goods which are considered to be luxury articles. Exchange is, however, being granted for all orders declared before September 30.

New Quick-Drying Tar for Roads

SIR DAVID MILNE-WATSON, president of the British Road Tar Association, speaking at the annual meeting in London, on Tuesday, November 3, mentioned that a new specification for tar had been evolved which could be used on roads where there was continuous and heavy traffic. It set very rapidly and affected a considerable saving in time.

From Week to Week

MR. WILLIAM BRADLEY, M.Sc., Ph.D. (Manchester) has been appointed lecturer in tinctorial chemistry and dyestuffs at Manchester University.

THE NOBEL PRIZE FOR MEDICINE has been awarded to Professor Otto Warburg, of Berlin. Professor Otto Warburg is a member of the Kaiser Wilhelm Institute, Berlin. He is famous for his discoveries on the nature and working of enzymes.

THE JOHNSTON CHEMICAL SCHOLARSHIP for 1931 has been won by Mr. Eric M. Stoddard, B.Sc., a graduate of Armstrong College, Newcastle. This scholarship, of the value of £145 and tenable for one year, together with a prize in books, was founded by the trustees of the late Professor Johnston, F.R.S., to promote advanced study and research in chemistry.

MR. DONALD MCDONALD, the newly appointed honorary secretary of the Chemical Engineering Group, will read a paper on "Platinum" at the forthcoming meeting of the Group, Friday, November 13, at 8 p.m. Mr. McDonald is well known as an authority on precious metals, and he will deal with the history, occurrence, metallurgy, properties and uses of platinum.

OPPOSITION to the duty on creosote oil has been the subject of joint representations made to the United States Tariff Commission by home importers and consumers and British producers. The testifiers, who included Dorman Long and Co., of Middlesbrough, the Yorkshire Tar Distillers, and a number of independent consumers on the Pacific coast and in the South, declared that the duty would result in increased prices, restriction of supply, and the curtailment of the creosote and lumber industries.

SHELL-MEX, LTD., is likely to be affected by a new petroleum refinery Bill that went to the Chilean Senate on October 30, after successfully passing through the Lower House. The measure grants to a single concessionaire a monopoly in the refining and selling of oil, petrol and allied products in Chile for seventeen years. It is understood in political circles that a certain small Chilean company will get the concession. Shell-Mex (a subsidiary of the Royal Dutch-Shell group) and the West India Co., which is owned by the Standard Oil Co. of New Jersey at present do most of the selling business in Chile.

PROFESSOR A. W. NASH, of the Department of Oil Engineering, and Refining at Birmingham University, lectured on Friday, October 30, to the members of the Segrave Club, Wolverhampton. Dealing with synthetic fuel oils and lubricants, he stated that there was no danger of a shortage of natural petroleum. The object of his researches had been to endeavour to find a source of supply in this country. The processes described included low temperature carbonisation, Berginisation of coal, catalytic hydrogenation and production of synthetic petroleum from water gas and ethylene gas.

AN important announcement to Tyneside was made on Thursday, October 29, at a luncheon given by Armstrong-Saurer Commercial Vehicles, Ltd. This was to the effect that an agreement has been made between the Armstrong Whitworth group of companies and the Société Anonyme Adolph Saurer (Arbon, Switzerland), as a result of which commercial vehicles using heavy oil will be manufactured at the Armstrong Whitworth Works at Scotswood, Newcastle. The first vehicle to be made at Scotswood, a lorry of six tons' pay load, was exhibited at the exhibition of commercial motors at Olympia.

A VERY SUCCESSFUL and well-attended meeting of the Section was held at Derby Technical College, on Thursday, October 29, when Mr. F. Scholefield, M.Sc., F.I.C., of Manchester College of Technology, gave a lecture on "Vat Dyestuffs: their application and properties." The meeting was the first to be held under the auspices of the Derby Joint Committee, and was supported by the Institute of Chemistry, the Society of Chemical Industry, and the Society of Dyers and Colourists. An interesting discussion was opened by the Chairman, Mr. J. F. Briggs, chief chemist to British Celanese, Ltd. In replying to the vote of thanks, Mr. Scholefield promised that, as had been suggested by the proposer, he would come again and "start where he had left off."

MR. H. L. FIELDER, B.Sc., A.I.C. (London) has been appointed chemist to the Smethwick gas undertaking.

THE REPUBLIC STEEL CORPORATION, of Cleveland, (Ohio), has returned a net loss of $5,500,000 (nominally £1,100,000) for the first nine months of 1931.

MAJOR A. G. CHURCH, the National Non-Party candidate for London University in the General Election, was defeated by Sir Graham Little (Independent) who obtained a majority of 5,327.

THE OFFICES OF *The Steam Engineer*, the first issue of which was noticed in THE CHEMICAL AGE, October 10, page 399, have been removed to 90-91 High Holborn, London, W.C.1. Their new telephone number is Chancery 7856.

RECENT WILLS include:—Professor John William Hinchley, professor of chemical engineering at the Imperial College of Science and Technology, South Kensington, £4,351, (net personalty £3,528). Mr. John Farrant, of Marlborough, 45 Vaughan Road, New Brighton, Wallasey, Cheshire, formerly chief cashier to the United Alkali Co., £6,953 (net personalty £5,553).

HONORARY DEGREES were conferred on Lord Rutherford, Professor Manne Siegbahn, professor of general physics in the University of Uppsala, and Professor V. M. Goldschmidt, of Göttingen, on the occasion of the opening of the new laboratory of physical chemistry at the University of Freiburg in Breisgau on October 1.

THE PAINT, VARNISH & LACQUER CLUB of Birmingham will hold their November meeting at the Market Hotel, Birmingham, at 7.30 p.m., on November 12, when a lecture will be given by Mr. Jameson Ralph, of the Aluminium Plant & Vessel Co., Ltd., on "Stand Oils." A number of well-known linseed oil experts are expected to take part in the discussion.

THE EXTENSION to the Loughborough Grammar School science laboratories was opened by Dr. W. H. Coates, of Imperial Chemical Industries, on Monday. Dr. Coates, who is an old boy, told a large audience that when he joined the school there were no science laboratories. He expressed the hope that as the boys passed through the laboratories they would benefit by the additional facilities. The extension had been carried out at a cost of £8,000.

MR. REGINALD G. CLARRY, who has been re-elected for his old seat, Newport (Mon), with a majority of over 8,000, is Chairman of the British Road Tar Association and the International Road Tar Conference. Mr. Clarry, who was born in Derby, was trained in civil engineering and chemistry, and had an active and successful business career before taking up politics. During the war he was honorary adviser to the High Explosives Department of the Ministry of Munitions, and later took complete control of the Duffryn Steel and Tin Plate Works, Morriston, Glam., where 100,000 tons of coal per annum were used as fuel. He was one of the earliest to recognise the extremely valuable products of coal in by-product recovery coke ovens, and has always appreciated the great potentialities of coal tar whether treated in gas works or coke ovens.

STUDENTS ASSISTED FIREMEN in fighting a fire within a few feet of a laboratory full of inflammable chemicals at St. Andrew's University on Tuesday morning, November 3, when the Physical Research Department of the University was destroyed. Mr. Geoffrey Swann, who occupies a bedroom on the south-west end of St. Salvator's Residence Hall, raised the alarm at 4.15 a.m. Undergraduates turned their attention to saving valuable documents in the chemistry department, which was threatened by the fire. The brigade were quickly on the scene and commenced a desperate fight to prevent the outbreak from spreading to the chemistry wing. By daylight the fire was under control but the research rooms, the advanced research laboratory, a chemistry lecture room, and the chemistry museum, with many valuable pieces of apparatus, had been destroyed, the total damage being estimated at £12,000.

Obituary

SIR JOSEPH CALVERT, of Park View, Middlesbrough, for some time commercial manager to Bolckow, Vaughan and Co., and later associated with other colliery companies, October 31, aged 78.

WILLIAM MILLAR TAYLOR, late manager of the Anglo-American Oil Co., Ltd., in Glasgow, October 27.

Patent Literature

The following information is prepared from published Patent Specifications and from the Illustrated Official Journal (Patents) by permission of the Controller to H.M. Stationery Office. Printed copies of full Patent Specifications accepted may be obtained from the Patent Office, 25, Southampton Buildings, London, W.C.2, at 1s. each.

Abstracts of Accepted Specifications

352,506. DYES. A. Carpmael, London. From I. G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, April 10, 1930.

Alkaline earth salts of sulphonated dyestuffs from nitranilines or their derivatives and acetoacetic acid arylides are employed for colouring rubber.

352,568. α-NAPHTHOL. A Carpmael, London. From I. G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, April 16, 1930.

α -Keto-tetrahydronaphthalene is treated with sulphur until hydrogen sulphide ceases to be evolved, the reaction being promoted by catalysts such as selenium, tellurium, arsenic, antimony, copper, silver, zinc or tin, or their oxides or sulphides, or vulcanisation accelerators such as diphenylguanidine, mercapto-benzothiazole, or hexamethylene-tetramine.

352,597. ACENAPHTHENE DERIVATIVES. W. W. Groves, London. From I. G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, April 30, 1930. Addition to 342,373 and 342,379 (see THE CHEMICAL AGE, Vol. xxiv, p. 422).

The products of specification 342,379, *e.g.*, the ketimide of acenaphth-peri-indandione and the hydrochloride of the ketimide of 3-chloroacenaphth-peri-indandione, are halogenated by various methods.

352,626. BENZANTHRONE DERIVATIVES. I. G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, May 12, 1930. Addition to 249,883 (see THE CHEMICAL AGE, Vol. xiv, p. 551).

A halogen-methylphthalimide is condensed with benzanthrone in the presence of a solvent and a catalyst removing hydrogen halide and the phthalic acid residue then split off to obtain ω-aminomethyl-benzanthrone.

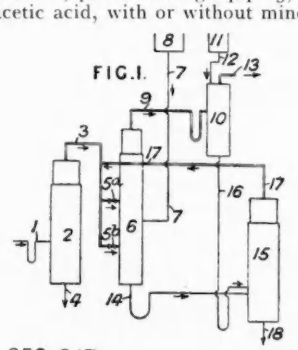
352,644. DIPHENYLAMINE DERIVATIVES. W. W. Groves, London. From I. G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, May 20, 1930. Addition to 333,783 (see THE CHEMICAL AGE, Vol. xxiii, p. 359).

Alkali metal salts of homologues of *m*-arylaminophenols which contain methyl groups in *m* or *p*-position to the hydroxyl groups are treated with carbon dioxide in an autoclave. Several examples are given.

352,647. ESTERS. Holverkohlungs Industrie Akt.-Ges., Constance, Baden, Germany. International Convention date, July 23, 1929.

The vapour mixture which passes off when despiriting mashes in a column 2, passes through pipe 3, to a column 6, supplied with acetic acid, with or without mineral acid, from

FIG. 1.



352,647

a tank 8. Ethyl acetate and other esters, excess alcohol and water vapour pass through pipe 9, to a column 10, supplied with hot water from a tank 11, and ethyl acetate and other esters are drawn off at 13. Waste water and alcohol pass through pipe 14 to a despiriting column 15, and washing water from column 10, similarly enters through pipe 16. Vapour passes through pipe 17 into pipe 3, and thence back to the column 6.

352,651. ETHYLENE GLYCOL. Chemische Fabrik Kalk Ges., and H. Oehme, 1 Kalker Hauptstrasse, Kalk, near Cologne, Germany. Application date, May 24, 1930.

Olefine chlorides are saponified with alkaline earth carbonates and the solution containing ethylene glycol, and calcium or magnesium chloride is distilled in vacuo at 250°-400° C. in a thin layer vacuum drier. Other methods are also described.

352,746. VULCANISATION ACCELERATORS. Roessler and Hasslacher Chemical Co., 10 East 40th Street, New York. International Convention date, August 2, 1929.

Vulcanisation accelerators are obtained by treating a metal salt of a mercapto-thiazole with the addition product of a benzyl halide and hexamethylene-tetramine.

352,781. AMINO COMPOUNDS. Imperial Chemical Industries, Ltd., Millbank, London. International Convention date, August 22, 1929.

The ageing of rubber is improved by adding compounds of the general formula

$$NH_2—R—\underset{\displaystyle H}{\underset{|}{N}}—R^1—X$$

where R and R^1 represent aryl residues and X represents hydrogen, hydroxy or amino. A compound of this class is obtained by condensing an amino-diphenyl such as benzidine with α or β-naphthol.

352,802. CHLOROPROPIONIC ESTERS. J. Y. Johnson, London. From I. G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, September 8, 1930.

Gaseous hydrochloric acid is introduced into acrylic nitrile, and the resulting chloropropionic nitrile saponified, and the chloropropionic acid esterified with an alcohol in the presence of hydrochloric acid. Alternatively, concentrated aqueous hydrochloric acid may be added to the nitrile, and gaseous hydrogen then passed in, so that saponification occurs simultaneously.

352,842. VINYL CHLORIDE. I. G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, October 18, 1929.

1 : 1 : 2-Trichlorethane is treated with zinc, iron or aluminium in the presence of water or steam. Examples are given in which zinc dust is used at 60° C., iron filings at 100-120° C. and a pressure of 70 lb. per sq. in., and iron filings at 300° C. with trichlorethane and steam. Vinyl chloride is condensed.

352,878. DYES. J. R. Geigy Akt.-Ges., 51 Riehenring, Basle, Switzerland. International Convention date, November 29, 1929. Addition to 352,368.

A diazo compound of a disazo dyestuff $A-N=N-B-N=X-C-NH_2$ where A is a residue of the benzene or naphthalene series, B is a residue of α -naphthylamine or its 6- and/or 7-sulphonic acid, C is a residue of a 1-amino-2-naphthol ether-6-sulphonic acid is coupled with a monoazo dye amine → (acid) J acid. The tetrakisazo dyes obtained give greener shades than those of specification 352,368.

352,935. ESTERS. J. Y. Johnson, London. From I. G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, April 5, 1930.

Long-chain fatty acids are esterified with an excess of dihydric or polyhydric aliphatic alcohols, and then an excess of fatty acids is added to esterify the remaining alcohol, the surplus of acid being extracted with ethyl alcohol, steam distillation in vacuo, or washing with dilute aqueous alkali. The process is applicable to the treatment of acids of very high molecular weight obtained by fermentation and decomposition of train oil, sulphur olive oil or sanza olive oil.

353,032. ALKYL HALIDES. E. H. Strange and T. Kane, 27 Church Street, Ventnor, Isle of Wight. Application date January 20, 1930.

Hydrochloric and/or hydrobromic acid is combined with an olefine of low molecular weight in the presence of an acid-resisting adsorbent such as partly or wholly dehydrated active carbon or activated charcoal, colloidal silica, or natural siliceous materials which have been dehydrated or extracted with

acids, such as kieselguhr. Examples are given of the treatment of pure or diluted ethylene, propylene and butylene, at temperatures below 120° C.

353,046. ARYL SULPHONAMIDES. A. Carpmael, London. From I. G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, April 9, 1930.

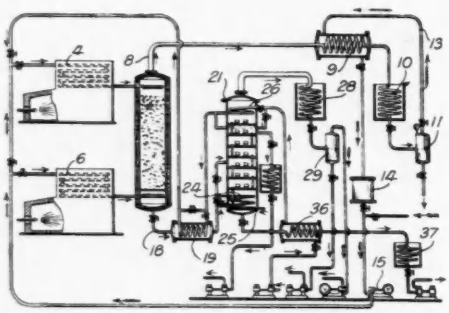
These compounds, which are tanning agents, have the general formula

$$R \begin{matrix} NH.SO_2\ R_1 \\ NH.SO_2\ R_2 \end{matrix}$$

where R is a substituted or unsubstituted arylene or diarylene and R_1 and R_2 are substituted or unsubstituted bi- or polynuclear arylsulphone-arylamide derivatives of a chain structure in which the sulphonic imide groups combining the aryl nuclei may be partly replaced by other acyl amino groups. One such compound, bis (1 : 2-dichlorobenzene-4-sulphonyl-3^1-aminobenzene-1^1-sulphonyl) - benzidine - *m-m*^{1} - disulphonic acid, is obtained by treating benzidine-*m-m*^{1}-disulphonic acid with 3-nitrobenzene sulphochloride, reducing to the diamino compound, and condensing with 1 : 2-dichlorobenzene-4-sulphochloride.

352,775. DESTRUCTIVE HYDROGENATION. Standard Oil Development Co., Linden, N.J., U.S.A. Assignees of J. M. Jennings, 1202 Park Boulevard, Baton Rouge, La., U.S.A. International Convention date, August 14, 1929.

Heavy oil is passed rapidly through a heating coil 4, into a column packed with catalytic material through which it passes downwards against a current of gas rich in hydrogen from the heating coil 6. The temperature may be 700°-850° F. and pressure 50-200 atmospheres. The catalyst may



352,775

be chromium and molybdenum oxides in lump form or on kaolin bricks. Gas and vapour pass through pipe 8, heat exchanger 9, and condenser 10, to a separator 11, from which the gases return through pipe 13 and exchanger 9, and pump 15 back to the system. Liquid oil is drawn off at reduced pressure through heat exchanger 19 to a flash tower 21 having heating coil 25, and cooling coil 26. The vapour passes on to condenser 28, and separator 29. The incoming oil is preheated in exchangers 19, 36, and cooling coil 26. Residual oil is drawn off through heat exchanger 36 and cooler 37.

352,814. AMMONIUM PHOSPHATES. Kunstdunger-Patent-Verwertungs Akt.-Ges., Glarus, Switzerland. International Convention date, October 5, 1929.

Phosphate rock is leached with sulphuric acid, filtered, and the phosphoric acid solution neutralised with ammonia. Ammonium phosphate is crystallised out, and the mother liquor returned to the leaching step so that its ammonium sulphate replaces some sulphuric acid.

352,850. DESTRUCTIVE HYDROGENATION. Standard Oil Development Co., Linden, N.J., U.S.A. (Assignees of E. B. Peck, 180 Lincoln Avenue, Elizabeth, N.J., U.S.A.) International Convention date, November 13, 1929.

Catalysts such as oxides and sulphides of chromium, molybdenum, tungsten, aluminium, zinc, alkali, alkaline earth, and rare earth metals used in the destructive hydrogenation of oils are separated from the oil and treated with hydrogen, below 700° F., and above 50 atmospheres pressures, to reactivate them. Gases from a hydrogenation retort may be used after cooling and scrubbing with oil, but the catalyst is treated with substantially pure hydrogen for a short time before using again.

352,864. CATALYTIC PRODUCTION OF METHANE AND HYDROGEN. H. Cohn, 22 Friedrich-Wilhelmstrasse, Berlin. International Convention date, November 7, 1929.

Catalysts such as nickel, iron, chromium, and their oxides, employed in the catalytic conversion of carbon monoxide in illuminating gas into methane, methane and carbon dioxide, or hydrogen and carbon dioxide, are employed on a carrier consisting of silica gel.

352,978. HEXAMETHYLENE-TETRAMINE. Gutehoffnungshütte Oberhausen Akt.-Ges., Oberhausen, Rhineland, Germany. International Convention date, January 7, 1929.

A mixture of methane and air is passed at a velocity of 0.5-600 metres per second through an electric field of frequency of 100,000-1,000,000 and the voltage of 100,000-500,000. The mixture is then passed through a washing apparatus and the hexamethylene tetramine separated from the formaldehyde. Intermediate electrodes are provided in the electric field.

353,054. PURIFYING OILS. W. W. Triggs, London. From Richfield Oil Co., of California, 6th Street, Los Angeles, U.S.A. Application date, April 15, 1930.

Vapour of gasoline, kerosene, lubricating or other mineral and shale oil is passed through a tower filled with firebrick over which is passed a 79-85 per cent. solution of zinc chloride at 145°-155° C. to purify the oil. The solution may contain 1-3 per cent. of zinc oxide or hydroxide in suspension.

353,055. PURIFYING OILS. Richfield Oil Co., of California, 6th Street, Los Angeles, U.S.A. International Convention date, May 8, 1929.

Oils are purified by treating the vapour with an aqueous solution of salts of zinc, cadmium, and mercury which may contain 0.5-5.0 per cent. of oxide or hydroxide in suspension, at a temperature of 300°-400° F. A preliminary purification by sulphuric acid or subsequent purification by caustic alkali and sulphuric acid may be employed.

353,071. CATALYTIC APPARATUS. K. Wiesler, Salt End, Hedon, Hull, A. M. Peake, 319 Clapham Road, London, and British Industrial Solvents, Ltd., Kinnaird House, Pall Mall East, London. Application date, April, 17, 1930.

In the oxidation of ethyl alcohol to acetaldehyde by means of air, a silver or copper catalyst is employed in the form of wire gauze, granules, turnings, tetrahedra, Raschig rings, wire spirals, etc.

353,076. FORMALDEHYDE. Gutehoffnungshütte Oberhausen Akt.-Ges., Rhineland, Germany. International Convention date, April 29, 1929.

A mixture of methane and carbon dioxide, the concentration of the carbon dioxide being equal to or greater than that of the methane, is passed through an electric field of voltage about 80,000 and frequency of 1,500,000. Catalysts such as calcium or magnesium carbonate may also be present.

353,100. CARBON BLACK AND HYDROGEN. Soc. D'Etudes et Realisation dite Ereal, 71 Canal d'Hanswick, Malines, Belgium. International Convention date, April 30, 1929.

Gaseous hydrocarbons are decomposed by passing through incandescent coke maintained at 1,000°-1,200° C. The temperature of the emergent gases is maintained below 600°-700° C. by varying the rate of flow and the depth of the fuel, or by admitting the gases at different depths. The apparatus is described.

353,152. CHROMIUM OXIDE. J. E. Demant, Ouise-Lamotte, Oise, France. Application date, May 22, 1930.

Chromium oxide is obtained by heating finely divided chromium or ferro chrome to 1,000°-1,200° C. with oxygen, ozonised air or nitrous gases. The product may be treated with acids or alkalies to remove ferric oxide or silica, or it may be treated at high temperature with reducing gases, and metallic iron then removed by treating with an acid.

353,160. TREATING ROCK PHOSPHATE. Odda Smelteverk Aktieselkap and E. Johnson, Odda, Norway. International Convention date, May 30, 1929.

Rock phosphate is dissolved in nitric acid and calcium nitrate crystallised out. The mother liquor is then treated with ammonia sufficient to precipitate tricalcium phosphate, which is removed and returned to the process to be treated together with fresh rock phosphate. The solution containing ammonium nitrate and phosphate is evaporated with or without potash salts to obtain mixed fertilisers. Several modifications of the process are described.

353,184. TREATING WASTE WATER CONTAINING CYANIDE. Oesterreichischalpine Montanges, 4 Friedrichstrasse, Vienna. International Convention date, June 24, 1929.

Waste water containing cyanide is treated in an irrigation plant with kiln gases, blast furnace gases, or engine exhaust gases, containing carbon dioxide, which decomposes the cyanide liberating hydrocyanic acid. The discharged water contains only traces of hydrocyanic acid.

353,232. FAT-SPLITTING AND DISPERSING AGENTS. H. T. Böhme Akt.-Ges., 29 Moritzstrasse, Chemnitz, Germany. International Convention date, September 21, 1929.

Fat-splitting and dispersing agents are obtained by sulphonating aliphatic unsaturated or hydroxy primary amines containing more than eight carbon atoms in the chain, *e.g.*, octodecenylamine, octodecanolamine, octodecylamine. The products may be associated with aromatic sulphonic acids or their salts, sulphonated oils, soaps, or organic solvents.

353,361. CATALYTIC HYDROGENATION. I. G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, November 26, 1929.

p-Hydroxy-phenyl-propanol-amine is obtained by treating the hydrochloride of *p*-hydroxyamino-propiophenone with hydrogen under pressure in the presence of nickel, or by treating an alcoholic solution of *p*-hydroxy-isonitroso-propiophenone hydrochloride with hydrogen in the presence of palladium. 3 : 4-Dihydroxy and *m*-hydroxy-phenyl-propanolamine are prepared in a similar manner.

353,373. HYDROAROMATIC CARBOXYLIC ACIDS. Schering-Kahlbaum Akt.-Ges., 170 Müllerstrasse, Berlin. International Convention date, January 11, 1930.

Hydroaromatic carboxylic acids are obtained by the hydrogenation, in the presence of nickel, of an alkali salt of an aromatic carboxylic acid or a substitution product in aqueous solution, *e.g.*, naphthalic acid may be converted into tetrahydronaphthalic acid.

Specifications Accepted with Date of Application

358,903. Phenol or its homologues, Manufacture of. F. Raschig Ges. July 8, 1929. Addition to 20,593/30.

358,926. Hydrocarbons, Manufacture of—by destructive hydrogenation. J. Y. Johnson. (*I.G. Farbenindustrie Akt.-Ges.*). April 9, 1930.

358,935. Pure sulphur from raw substances containing sulphur, Process for obtaining—by continuous operation. K. Von Szombathy, K. Kell, and P. Schmitz. July 8, 1929.

358,988. Coal, Treatment of—with solvents. Koppers Co. April 12, 1929.

359,000. Olefine polysulphide plastic compounds, Manufacture of. J. C. Patrick. September 19, 1929.

359,001. Valuable organic nitrogen compounds, Manufacture of. J. Y. Johnson. (*I.G. Farbenindustrie Akt.-Ges.*). July 7, 1930.

359,004. Technical hydrolysis of thiocyanic acid or salts thereof. A. Carpmael. (*I.G. Farbenindustrie Akt.-Ges.*). July 8, 1930.

359,013. Removing phenols from oils, tars, and the like. N. R. Hood and Imperial Chemical Industries, Ltd., July 11, 1930.

359,020. Fertilisers, Manufacture of. Imperial Chemical Industries, Ltd. July 13, 1929.

359,022-3-4-5-6-7. Cracking, or cracking and destructive hydrogenation of hydrocarbons Process and apparatus for. W. L. Gomory. July 15, 1930.

359,051. Condensation products and pigment dyestuffs of the anthraquinone series. Manufacture of. A. Carpmael. (*I.G. Farbenindustrie Akt.-Ges.*). July 19, 1930.

359,063. Derivatives of 3-nitro-4-hydroxy-benzamide, Manufacture of. A. Carpmael. (*I.G. Farbenindustrie Akt.-Ges.*). July 22, 1930. Addition to 341,970.

359,074. Phosphorus and alumina, Simultaneous production of. I.G. Farbenindustrie Akt.-Ges. August 31, 1929.

359,096. Disazo dyestuffs, Manufacture of. J. T. Geigy Akt.-Ges. August 9, 1929.

359,175. Carbon and carbon-dioxide from carbon-monoxide, Manufacture of. N. Grunstein. October 3, 1929.

359,188. Reduction of organic compounds. H. T. Bohme Akt.-Ges. December 9, 1929. Addition to 346,237, and 30,137/30.

359,201. Aromatic compounds containing nitrogen, Manufacture of. I.G. Farbenindustrie Akt.-Ges. October 17, 1929.

359,234. Carbon monoxide and/or diolefines from gases and vapours, Process for absorbing. Naamlooze Vennootschap de Bataafsche Petroleum Maatschappij. November 6, 1929.

359,254. Sulphur dyestuffs, Manufacture of. I.G. Farbenindustrie Akt.-Ges. November 19, 1929.

359,262. Hydroxy nitriles, Manufacture of. J. Y. Johnson. (*I.G. Farbenindustrie Akt.-Ges.*). November 26, 1930.

359,272. Sodium bicarbonate, Preparation of. A. Mentzel. December 16, 1929.

359,273 and 359,276. Sulphur dyestuffs, Manufacture of. I.G. Farbenindustrie Akt.-Ges. December 4, 1929.

359,292. Hydrofluoric acid, low in silica, Production of. A. L. Mond. (*I.G. Farbenindustrie Akt.-Ges.*). December 15, 1930.

359,313. Apparatus for condensing vapours and/or for exothermic chemical reactions. Appareils et Evaporateurs Kestner. January 6, 1930.

359,318. Diaryl-guanidines, Process for producing. Silesia Verein Chemischer Fabriken. November 27, 1930. Addition to 258,203.

359,348. Acid-wool dyestuffs of the anthraquinone series, Manufacture of. I.G. Farbenindustrie Akt.-Ges. February 25, 1930.

359,368. Reaction towers for the manufacture of sulphuric acid. Aktieselskabet Dansk Svovlsyre—and Superphosphat—Fabrik. April 24, 1930.

359,378. Synthesis of ammonia. Soc. of Chemical Industry in Basle. July 1, 1930.

Applications for Patents

[In the case of applications for patents under the International Convention, the priority date (that is, the original application date abroad which the applicant desires shall be accorded to the patent) is given in brackets, with the name of the country of origin. Specifications of such applications are open to inspection at the Patent Office on the anniversary of the date given in brackets, whether or not they have been accepted.]

Adamoli, C. Recovery of beryllium compounds from minerals. 30095. October 30. (Germany, January 16.)

Boot's Pure Drug Co., Ltd., Pyman, F. L., and Easson, A. P. T. Production of organic salts of bismuth. 30024. October 29.

British Celanese, Ltd. Ellis, G. H. Colouration of textiles. 29621, 29622. October 26.

—— Groombridge, W. H. Manufacture of organic compounds. 29689. October 26.

—— Textile fabrics. 29975. October 29.

—— Production of effects on materials. 30144. October 30. (United States, October 30, '30.)

British Drug Houses, Ltd., and Jewell, W. Preparation of vitamin concentrates. 30042. October 29.

British Industrial Solvents, Ltd., Dymock, J. B., Joshua, W. P., and Stanley, H. M. Manufacture of condensation products from aliphatic organic compounds. 29674. October 26.

Byk-Guldenwerke Chemische Fabrik Aka.-Ges. Production of liquid preparations of tribromoethylalcohol. 29898. October 28. (Germany, November 4, '30.)

Carpmael, A. (*I.G. Farbenindustrie Akt.-Ges.*). Manufacture of water-insoluble azo dyestuffs. 29804. October 27.

Du Pont de Nemours & Co., E. I., and Lazier, W. A. Hydrogenation catalysts, and their application. 29922. October28.

—— Production of mono-calcium phosphate, &c. 30131. October 30. (United States, October 31, '30.)

Dymock, J. B. Manufacture of condensation products from aliphatic organic compounds. 29674. October 26.

Groves, W. W. (*I.G. Farbenindustrie Akt.-Ges.*). Manufacture of bituminous surfacing materials. 29687. October 26.

I.G. Farbenindustrie Akt.-Ges. Fusion electrolytic processes. 29646. October 26. (Germany, November 12, '30.)

—— Production of magnesium. 29742. October 27. (Germany, November 8, '30.)

—— Manufacture of liquid preparations from tribromoethyl alcohol. 30038. October 29. (Germany, October 30, '30.)

—— Manufacture of shaped ceramic products of pure white shades. 30121. October 30. (Germany, November 1, '30.)

Imperial Chemical Industries, Ltd., and Inglis, N. P. Vacuum insulating vessels &c. 29921. October 28.

——Age-resisting rubber compounds. 30034. October 29.

—— Lawrie, L. G., and Dunbar, C. Reduction of lustre of cellulose derivatives. 30130. October 30.

—— Dyestuffs. 30228. October 31.

Johnson, J. Y. (*I.G. Farbenindustrie Akt.-Ges.*). Manufacture of diphenyl compounds. 29636. October 26.

—— Johnson, J. Y. Manufacture of liquid products from carbonaceous materials. 29972. October 29.

—— Johnson, J. Y. Manufacture of liquid hydrocarbons of the benzene series. 30105. October 30.

—— Johnson, J. Y. Separation of weak acids from gaseous mixtures. 30106. October 30.

Krassa, P. Manufacture of caustic soda. 29896. October 28. (Austria, November 4, '30.)

Llewellyn, I. P., and Spence, H. Preparation of catalytic materials, and carriers therefor. 30188. October 31.

Oakley, P., and Tullis, D. R. Production of an aluminium alloy. 29722. October 27.

Soc. of Chemical Industry in Basle. Manufacture of sulphurised dyestuffs &c. 29657. October 26. (Switzerland, October 24, '30.)

—— Manufacture of azo dyestuffs on fibre. 30110. October 30. (Switzerland, November 3, '30.)

Tennant, W. J. (*Naamlooze Vennootschap Maatschappij tot Exploitatie der Vereenigde Oliefabrieken Zwijndrecht*). Recovery of pale fatty acids from cotton-seed black grease. 29923. October 28.

Wyler, M. Dyestuffs. 30228. October 31.

Weekly Prices of British Chemical Products

The prices and comments given below respecting British chemical products are based on direct information supplied by the British manufacturers concerned. Unless otherwise qualified, the figures quoted apply to fair quantities, net and naked at makers' works.

General Heavy Chemicals

ACID, ACETIC, 40% TECH.—£18 15s. per ton d/d address U.K. in casks.

ACID CHROMIC.—11d. per lb., less 2½% d/d U.K.

ACID HYDROCHLORIC.—Spot, 3s. 9d. to 6s. carboy d/d, according to purity, strength and locality.

ACID NITRIC, 80° Tw.—Spot, £20 to £25 per ton makers' works, according to district and quality.

ACID SULPHURIC.—Average National prices f.o.r. makers' works, with slight variations up and down owing to local considerations; 140° Tw., Crude acid, 60s. per ton. 168° Tw., Arsenical, £5 10s. per ton. 168° Tw., Non-arsenical, £6 15s. per ton.

AMMONIA (ANHYDROUS).—Spot, 10d. per lb., d/d in cylinders.

AMMONIUM BICHROMATE.—8½d. per lb., d/d U.K.

BISULPHITE OF LIME.—£7 10s. per ton, f.o.r. London, packages free.

BLEACHING POWDER, 35/37%.—Spot, £7 19s. per ton d/d station in casks, special terms for contracts.

BORAX, COMMERCIAL.—Crystals, £15 10s. per ton; granulated, £14 10s. per ton; powder, £16 per ton. (Packed in 1 cwt. bags, carriage paid any station in Great Britain. Prices quoted are for one ton lots and upwards.)

CALCIUM CHLORIDE (SOLID), 70/75%.—Spot, £4 15s. to £5 5s. per ton d/d station in drums.

CHROMIUM OXIDE.—9d. to 9½d. per lb. according to quantity d/d U.K.

CHROMETAN.—Crystals, 3¼d. per lb. Liquor, £18 12s. 6d. per ton d/d U.K.

METHYLATED SPIRIT 61 O.P.—Industrial, 1s. 11d. to 2s. 4d. per gall.; pyridinised industrial, 2s. 1d. to 2s. 6d. per gall.; mineralised, 3s. to 3s. 4d. per gall. 64 O.P., 1d. extra in all cases. Prices according to quantity.

NICKEL SULPHATE.—£38 per ton d/d.

NICKEL AMMONIA SULPHATE.—£38 per ton d/d.

POTASH CAUSTIC.—£30 to £33 per ton.

POTASSIUM BICHROMATE CRYSTALS AND GRANULAR.—4¼d. per lb. net d/d U.K., discount according to quantity; ground ½d. per lb. extra.

POTASSIUM CHLORATE.—3⅜d. per lb. ex-wharf, London, in cwt. kegs.

POTASSIUM CHROMATE.—8¾d. per lb. d/d U.K.

SALAMMONIAC.—First lmp, spot, £40 17s. 6d. per ton d/d address in barrels. Chloride of ammonia, £37 to £45 per ton, carr. paid.

SALT CAKE, UNGROUND.—Spot, £3 10s. per ton d/d station in bulk.

SODA ASH, 58%.—Spot, £6 per ton, f.o.r. in bags, special terms for contracts.

SODA CAUSTIC, SOLID, 76/77° E.—Spot, £14 10s. per ton, d/d station.

SODA CRYSTALS.—Spot, £5 to £5 5s. per ton, d/d station or ex depot in 2-cwt. bags.

SODIUM ACETATE 97/98%.—£21 per ton.

SODIUM BICARBONATE, REFINED.—Spot, £10 10s. per ton d/d station in bags.

SODIUM BICHROMATE CRYSTALS, CAKE, GRANULAR, AND POWDER.—3½d. per lb. net d/d U.K., discount according to quantity. Anhydrous ¾d. per lb. extra.

SODIUM BISULPHITE POWDER, 60/62%.—£16 10s. per ton delivered 1-cwt. iron drums for home trade.

SODIUM CHLORATE.—2¾d. per lb.

SODIUM CHROMATE.—3⅜d. per lb. d/d U.K.

SODIUM NITRITE.—Spot, £19 per ton, d/d station in drums.

SODIUM PHOSPHATE.—£14 per ton, f.o.r. London, casks free.

SODIUM SILICATE., 140° Tw.—Spot, £8 5s. per ton, d/d station returnable drums.

SODIUM SULPHATE (GLAUBER SALTS).—Spot, £4 2s. 6d. per ton, d/d.

SODIUM SULPHIDE SOLID, 60/62%.—Spot, £10 5s. per ton, d/d in drums. Crystals—Spot, £8 5s. per ton, d/d in casks.

SODIUM SULPHITE, PEA CRYSTALS.—Spot, £13 10s. per ton; d/d station in kegs. Commercial—Spot, £9 per ton, d/d station in bags.

Coal Tar Products

ACID CARBOLIC CRYSTALS.—5¼d. to 6¼d. per lb. Crude 60's 1s. 4d. to 1s. 5d. per gall.

ACID CRESYLIC 99/100.—1s. 8d. to 1s. 9d. per gall. B.P., 3s. per gall. Refined, 2s. to 2s. 2d. per gall. Pale, 98%, 1s. 7d. to 1s. 8d. Dark, 1s. 4d. to 1s. 4½d.

ANTHRACENE OIL, STRAINED (GREEN OIL).—4½d. to 4¾d. per gall.

BENZOLE.—Prices at works: Crude, 7d. to 7½d. per gall.; Standard Motor, 1s. 2d. to 1s. 3d. per gall. 90%.—1s. 3d. to 1s. 4d. per gall. Pure, 1s. 6d. to 1s. 7d. per gall.

TOLUOLE.—90%, 2s. per gall. Pure, 2s. 3d. per gall.

XYLOL.—1s. 10d. to 1s. 11d. per gall. Pure, 2s. to 2s. 1d. per gall.

CREOSOTE.—Standard specification, for export, 4¾d. to 5d. net per gall. f.o.b.; for Home, 3¾d. per gall. d/d.

NAPHTHA.—Solvent, 90/160, 1s. 3d. per gall. Solvent, 95/160, 1s. 5d. to 1s. 6d. per gall. Solvent, 90/190, 11d. to 1s. 2d. per gall.

NAPHTHALENE.—Purified Crystals, £10 per ton, in bags.

PITCH.—Medium soft, 60s.-65s. per ton, in bulk at makers' works.

PYRIDINE.—90/140, 3s. to 3s. 3d. per gall. 90/160, 3s. 3d. to 3s. 6d. per gall. 90/180, 1s. 9d. to 2s. per gall.

Intermediates and Dyes

In the following list of Intermediates delivered prices include packages except where otherwise stated:—

ACID GAMMA.—Spot, 3s. 3d. per lb. 100% d/d buyer's works.

ACID H.—Spot, 2s. 3d. per lb. 100% d/d buyer's works.

ACID NAPHTHIONIC.—1s. 2d. per lb. 100% d/d buyer's works.

ACID NEVILLE AND WINTHER.—Spot, 2s. 6d. per lb. 100% d/d buyer's works.

ACID SULPHANILIC.—Spot, 8¼d. per lb. 100% d/d buyer's works.

ANILINE OIL.—Spot, 8d. per lb., drums extra, d/d buyer's works.

ANILINE SALTS.—Spot, 8d. per lb. d/d buyer's works, casks free.

BENZALDEHYDE.—Spot, 1s. 6d. per lb., packages extra, d/d buyer's works.

BENZIDINE BASE.—Spot, 2s. 3d. per lb. 100% d/d buyer's works.

o-CRESOL 30/31° C.—£2 6s. 5d. per cwt., in 1-ton lots.

m-CRESOL 98/100%.—2s. 9d. per lb., in ton lots.

p-CRESOL 34.5° C.—1s. 9d. per lb., in ton lots.

DICHLORANILINE.—2s. 5d. per lb.

DIMETHYLANILINE.—Spot, 1s. 6d. per lb., packages extra, d/d buyer's works.

DINITROBENZENE.—7¾d. per lb.

DINITROTOLUENE.—48/50° C., 7d. per lb.; 66/68° C., 7¾d.-8d. per lb.

DIPHENYLAMINE.—Spot, 1s. 8d. per lb., d/d buyer's works.

α-NAPHTHOL.—Spot, 1s. 9d. per lb. d/d buyer's works.

β-NAPHTHOL.—Spot, £65 per ton in 1 ton lots, d/d buyer's works.

α-NAPHTHYLAMINE.—Spot, 10½d. per lb. d/d buyer's works.

β-NAPHTHYLAMINE.—Spot, 2s. 9d. per lb. d/d buyer's works.

o-NITRANILINE.—5s. 11d. per lb.

m-NITRANILINE.—Spot, 2s. 6d. per lb. d/d buyer's works.

p-NITRANILINE.—Spot, 1s. 8d. per lb. d/d buyer's works.

NITROBENZENE.—Spot, 6½d. per lb.; 5-cwt. lots, drums extra, d/d buyers' works.

NITRONAPHTHALENE.—8¾d. per lb.

SODIUM NAPHTHIONATE.—Spot, 1s. 6d. per lb. 100% d/d buyer's works.

o-TOLUIDINE.—Spot, 9½d. per lb., drums extra, d/d buyer's works.

p-TOLUIDINE.—Spot, 1s. 6d. per lb. d/d buyer's works.

m-XYLIDINE ACETATE.—3s. 3d. per lb., 100%.

Wood Distillation Products

ACETATE OF LIME.—Brown, £6 10s. per ton. Grey, £11 to £13 per ton. Liquor, 7d. to 9d. per gall.

ACETIC ACID, TECHNICAL, 40%.—£15 15s. per ton.

ACETONE.—£63 to £65 per ton.

AMYL ACETATE, TECHNICAL.—85s. to 95s. per cwt.

CHARCOAL.—£6 10s. per ton, according to grade and locality.

IRON LIQUOR.—24°/30° Tw., 9d. to 1s. 2d. per gall.

METHYL ACETONE, 40/50%.—£43 per ton.

RED LIQUOR.—16° Tw., 7½d. to 9d. per gall.

WOOD CREOSOTE.—9d. to 1s. 6d. per gall., unrefined.

WOOD NAPHTHA, MISCIBLE.—1s. per gall. Solvent, 3s. 6d. to 4s. per gall.

WOOD TAR.—£1 10s. per ton.

BROWN SUGAR OF LEAD.—£30 to £32 per ton.

Rubber Chemicals

ANTIMONY SULPHIDE.—Golden, 6d. to 1s. 1d. per lb., according to quality; Crimson, 1s. 3d. to 1s. 5d. per lb., according to quality.

ARSENIC SULPHIDE, YELLOW.—1s. 5d. to 1s. 7d. per lb.

BABYTES.—£7 to £8 10s. per ton, according to quality.

CADMIUM SULPHIDE.—3s. 3d. to 3s. 6d. per lb.

CARBON BISULPHIDE.—£26 to £28 per ton, according to quantity; drums extra.

CARBON, BLACK.—3½d. to 4½d. per lb., ex wharf.

CARBON TETRACHLORIDE.—£40 to £50 per ton, according to quantity drums extra.

CHROMIUM OXIDE, GREEN.—1s. 2d. per lb.

DIPHENYLGUANIDINE.—2s. 6d. per lb.

INDIARUBBER SUBSTITUTES, WHITE.—4d. to 5½d. per lb.; Dark, 4d. to 4½d. per lb.

LAMP BLACK.—£30 per ton.

LITHOPONE, 30%.—£20 to £22 per ton.

SULPHUR.—£11 10s. to £15 15s. per ton.

MINERAL RUBBER "RUPRON."—£17.

PIPERIDINE RUBBER ACCELERATORS.—P.P.D., 10s. 6d. to 11s. 6d. per lb.; Z.P.D., 7s. to 7s. 6d. per lb.; L.P.D., 6s. 6d. to 7s. per lb.

SULPHUR CHLORINE.—4d. to 7d. per lb., according to quality.

SULPHUR PRECIP. B.P.—£55 to £60 per ton, according to quantity.

SULPHUR PRECIP. COMMERCIAL.—£40 to £45 per ton.

VERMILION, PALE OR DEEP.—6s. 8d. to 6s. 10d. per lb.

ZINC SULPHUR.—10d. to 1s. 1d. per lb.

Pharmaceutical and Photographic Chemicals

ACETANILIDE.—1s. 5d. per lb.

ACID, ACETIC, PURE, 80%.—£37 5s. per ton d/d address U.K. in casks.

ACID, ACETYL SALICYLIC.—2s. 7d. to 2s. 9d. per lb., according to quantity.

ACID, BENZOIC B.P.—1s. 10d. per lb., for synthetic product. Solely ex Gum, 1s. 3d. to 1s. 6d. per oz.; 50-oz. lots, 1s. 3d. per oz.

ACID, BORIC B.P.—Crystal, £34 per ton; powder, £35 per ton; For one-ton lots and upwards. Packed in 1-cwt. bags carriage paid any station in Great Britain.

ACID, CAMPHORIC.—19s. to 21s. per lb.

ACID, CITRIC.—1s. 0½d. per lb., less 5%.

ACID, GALLIC.—2s. 9d. per lb., for pure crystal, in cwt. lots.

ACID, MOLYBDIC.—5s. to 6s. 3d. per lb. according to quantity. Packages extra.

ACID, PYROGALLIC, CRYSTALS.—7s. 3d. per lb. for 28-lb. lots; Resublimed, 8s. 6d. per lb. for 28-lb. lots, d/d.

ACID, SALICYLIC, B.P. PULV.—1s. 5d. to 1s. 8d. per lb. Technical.—1s. to 1s. 2d. per lb.

ACID, TANNIC B.P.—2s. 8d. to 2s. 10d. per lb.

ACID, TARTARIC.—1s. 0½d. per lb., less 5%.

AMIDOL.—7s. 6d. to 11s. 3d. per lb., according to quantity.

AMMONIUM BENZOATE.—3s. 6d. per lb.

AMMONIUM CARBONATE B.P.—£36 per ton. Powder, £39 per ton in 5-cwt. casks. Resublimated, 1s. per lb.

AMMONIUM MOLYBDATE.—5s. to 6s. 3d. per lb. according to quantity. Packages extra.

ATROPHINE SULPHATE.—7s. to 7s. 6d. per oz., according to quantity.

BARBITONE.—5s. 9d. to 6s. per lb.

BENZONAPHTHOL.—2s. 10d. per lb.

BISMUTH CARBONATE.—7s. 9d. per lb.

BISMUTH CITRATE.—9s. 2d. per lb.

BISMUTH SALICYLATE.—7s. 9d. per lb.

BISMUTH SUBNITRATE.—6s. 6d. per lb.

BISMU H NITRATE.—Cryst. 5s. 1d. per lb.

BISMUTH OXIDE.—11s. 1d. per lb.

BISMUTH SUBCHLORIDE.—10s. 9d. per lb.

BISMUTH SUBGALLATE.—7s. 4d. per lb. Extra and reduced prices for smaller and larger quantities of all bismuth sales respectively.

BISMUTHI ET AMMON LIQUOR.—Cit. B.P. in W.Qts. 1s. 2d. per lb.; 6 W. Qts. 11½d. per lb.; 12 W. Qts. 10d. per lb.; 36 W. Qts. 9½d. per lb. Liquor Bismuth B.P., in W. Qts., 1s. 2d. per lb.; 6 W. Qts., 11½d. per lb.; 12 W. Qts. 10d. per lb.; 36 W. Qts., 9½d. per lb.

BORAX B.P.—Crystal, £23 10s. per ton; powder, £24 per ton; for one-ton lots and upwards. Packed in 1-cwt. bags carriage paid any station in Great Britain.

BROMIDES, B.P.—Ammonium, 1s. 7d. per lb.; potassium, 1s. 4d. per lb.; granular, 1s. 5d. per lb.; sodium, 1s 6d. per lb. Prices for 1-cwt. lots.

CAFFEIN, PURE.—6s. 6d. per lb.

CAFFEIN CITRAS.—5s. per lb.

CALCIUM LACTATE.—B.P., 1s. 1½d. to 1s. 3d. per lb., according to quantity.

CAMPHOR.—Refined flowers, 3s. 2d. to 3s. 4d. per lb., transparent tablets, 3s. 5d. to 3s. 7d., according to quantity; also special contract prices.

CHLORAL HYDRATE.—2s. 11½d. to 3s. 1½d. per lb.

CHLOROFORM.—2s. 4d. per lb.

ETHERS.—S.G. .730—1s. 1d. to 1s. 2d. per lb., according to quantity; other gravities at proportionate prices.

FORMALDEHYDE, 40%.—30s. per cwt. in barrels, ex wharf.

GLUCOSE, MEDICINAL.—1s. 6d. to 2s. per lb. for large quantities.

HEXAMINE.—1s. 10d. to 2s. per lb., according to quantity.

HYDROGEN PEROXIDE (12 VOLS.).—1s. 4d. per gallon, f.o.r. makers' works, naked. B.P., 10 vols., 2s. to 2s. 3d. per gall.; 20 vols., 3s. per gall.

HYDROQUINONE.—4s. 7d. per lb. in 1-lb. lots; 3s. 5¾d. per lb. in cwt. lots.

HYPOPHOSPHITES.—Calcium, 2s. 11d. to 3s. 4d. per lb.; potassium, 3s. 2d. to 3s. 7d. per lb.; sodium, 3s. 1d. to 3s. 6d. per lb.; for 28-lb. lots.

IRON AMMONIUM CITRATE.—B.P., 1s. 9d. per lb. for 28-lb. lots. Green, 2s. 6d. per lb., list price. U.S.P., 2s. 7d. per lb. list price.

IRON PERCHLORIDE.—18s. to 20s. per cwt., according to quantity.

IRON QUININE CITRATE.—B.P., 8½d. to 8¾d. per oz.

MAGNESIUM CARBONATE.—Light B.P., 36s. per cwt.

MAGNESIUM OXIDE.—Light Commercial, £62 10s. per ton, less 2½%; Heavy commercial, £21 per ton, less 2½%; in quantity lower; Heavy Pure, 2s. to 2s. 3d. per lb.

MENTHOL.—A.B.R. recrystallised B.P., 15s. 9d. per lb. net; Synthetic, 8s. 6d. to 12s. per lb.; Synthetic detached crystals, 8s. 6d. to 9s. 9d. per lb., according to quantity; Liquid (95%), 8s. per lb.

MERCURIALS B.P.—Up to 1-cwt. lots, Red Oxide, crystals, 9s. 4d. to 9s. 5d. per lb., levig., 8s. 10d. to 8s. 11d. per lb.; Corrosive Sublimate, Lump, 7s. 5d. to 7s. 6d. per lb., Powder, 6s. 8d. to 6s. 9d. per lb.; White Precipitate, Lump, 7s. 5d. to 7s. 6d. per lb.; Powder, 7s. 6d. to 7s. 7d. per lb.; Calomel, 8s. to 8s. 1d. per lb.; Yellow Oxide, 8s. 7d. to 8s. 8d. per lb.; Persulph, B.P.C., 7s. 9d. to 7s. 10d. per lb.; Sulph. nig., 8s. 2d. to 8s. 3d. per lb. Special prices for larger quantities.

METYL SALICYLATE—1s. 4½d. to 1s. 6d. per lb.

PARAFORMALDEHYDE.—1s. 6d. per lb.

PARALDEHYDE.—1s. 1d. per lb.

PHENACETIN.—4s. to 4s. 3d. per lb.

PHENOLPHTHALEIN.—4s. 9d. to 5s. per lb.

POTASSIUM BITARTRATE 99/100% (Cream of Tartar).—90s. per cwt., less 2½ per cent.

POTASSIUM CITRATE.—B.P., 1s. 7d. per lb. for 28-lb. lots.

POTASSIUM FERRICYANIDE.—1s. 7½d. per lb., in 125-lb. kegs.

POTASSIUM IODIDE.—B.P., 21s. 4d. to 24s. 4d. per lb., as to quantity.

POTASSIUM METABISULPHITE.—50s. per cwt. d/d London, kegs free.

POTASSIUM PERMANGANATE.—B.P. crystals, 5½d. per lb., spot.

QUININE SULPHATE.—2s. 2d. per oz. for 1,000-oz. lots.

SACCHARIN.—43s. 6d. per lb.

SALICIN.—16s. 6d. to 17s. 6d. per lb., according to quantity.

SILVER NITRATE.—10d. per oz. for 500-oz. lots, sticks, 2d. per oz. extra.

SODIUM BARBITONUM.—8s. 6d. to 9s. per lb. for 1-cwt. lots.

SODIUM BENZOATE B.P.—1s. 7d. per lb.

SODIUM CITRATE.—B.P.C. 1911, 1s. 4d. per lb. B.P.C. 1923, and U.S.P., 1s. 8d. per lb., for 28-lb. lots.

SODIUM HYPOSULPHITE, PHOTOGRAPHIC.—£15 per ton, d/d consignee's station in 1-cwt. kegs.

SODIUM NITROPRUSSIDE.—16s. per lb.

SODIUM POTASSIUM TARTRATE (ROCHELLE SALT).—73s. per cwt. net. Crystals, 2s. 6d. per cwt. extra.

SODIUM SALICYLATE.—Powder, 1s. 10d. to 2s. 2d. per lb. Crystal, 1s. 11d. to 2s. 3d. per lb.

SODIUM SULPHIDE, PURE RECRYSTALLISED.—10d. to 1s. 2d. per lb.

SODIUM SULPHITE, ANHYDROUS.—£26 to £28 per ton, according to quantity. Delivered U.K.

STRYCHNINE, ALKALOID CRYSTAL, 2s. per oz.; hydrochloride, 1s. 9½d. per oz.; nitrate, 1s. 8d. per oz.; sulphate, 1s. 9d. per oz., for 1,000-oz. quantities.

TARTAR EMETIC, B.P.—Crystal or powder, 1s. 9d. to 2s. per lb.

THYMOL.—Puriss, 6s. 1½d. to 7s. per lb., according to quantity. Natural, 12s. per lb.

ZINC STEARATE.—1s. 4d. to 1s. 6d. per lb.

Perfumery Chemicals

ACETOPHENONE.—7s. per lb.

AUBEPINE (EX ANETHOL).—8s. 9d. per lb.

AMYL ACETATE.—2s. 3d. per lb.

AMYL BUTYRATE.—4s. 9d. per lb.

AMYL CINNAMIC ALDEHYDE.—9s. 3d. per lb.

AMYL SALICYLATE.—2s. 6d. per lb.

ANETHOL (M.P. 21/22° C.).—5s. per lb.

BENZALDEHYDE FREE FROM CHLORINE.—2s. 6d. per lb.

BENZYL ACETATE FROM CHLORINE-FREE ALCOHOL.—1s. 9d. per lb.

BENZYL ALCOHOL FREE FROM CHLORINE.—1s. 10d. per lb.

BENZYL BENZOATE.—2s. 2d. per lb.

CINNAMIC ALDEHYDE NATURAL.—10s. 6d. per lb.

COUMARIN.—13s. per lb.

CITRONELLOL.—7s. 9d. per lb.

CITRAL.—6s. per lb.

ETHYL CINNAMATE.—8s. per lb.

ETHYL PHTHALATE.—2s. 6d. per lb.

EUGENOL.—7s. 6d. per lb.

GERANIOL.—7s. 3d. to 12s. per lb.

GERANIOL (FROM PALMAROSA).—17s. per lb.

HELIOTROPINE.—6s. per lb.

ISO EUGENOL.—9s. per lb.

LINALOL (EX BOIS DE ROSE).—5s. 6d. per lb.

LINALYL ACETATE, EX BOIS DE ROSE.—7s. 6d. per lb. Ex Shui Oil, 7s. 6d. per lb.

METHY ANTHRANILATE.—7s. per lb.

METHYL BENZOATE.—4s. 3d. per lb.

MUSE XYLOL.—6s. 6d. per lb.

PHENYL ETHYL ACETATE.—10s. per lb.

PHENYL ETHYL ALCOHOL.—8s. 3d. per lb.

RHODINOL.—40s. per lb.

SAFROL.—2s. per lb.

VANILLIN, EX CLOVE OIL.—16s. to 18s. per lb. Ex Guaiacol.—14s. 3d. to 16s. 3d. per lb.

Essential Oils

ANISE OIL.—2s. 6d. per lb.

BERGAMOT OIL.—9s. 6d. per lb.

BOURBON GERANIUM OIL.—17s. 6d. per lb.

CAMPHOR OIL.—White, 105s. per cwt.

CANANGA.—Java, 7s. per lb.

CINNAMON OIL LEAF.—4s. per oz.

CITRONELLA OIL.—Java, 2s. 8d. per lb., c.i.f. Pure Ceylon, 2s. per lb.

CLOVE OIL, 90/92%.—6s. per lb.

EUCALYPTUS OIL, AUSTRALIAN, B.P. 70/75%.—1s. 4d. per lb.

LAVENDER OIL.—Mont Blanc, 38/40%, 10s. per lb.

LEMON OIL.—4s. 9d. per lb.

London Chemical Market

The following notes on the London Chemical Market are specially supplied to THE CHEMICAL AGE *by Messrs. R. W. Greeff & Co., Ltd., and Messrs. Chas. Page & Co., Ltd., and may be accepted as representing these firms' independent and impartial opinions.*

London, November 5, 1931.

INQUIRY for the various chemicals has been fully maintained during the past week and prices on the whole are firm.

General Chemicals

ACETONE.—In good request and firm at £62 per ton.

ACID, ACETIC.—Technical 80% £36 5s. to £38 5s. per ton, Pure 80% £37 5s. to £39 5s. per ton, with a good daily demand.

ACID, CITRIC.—About 1s. 1d. per lb., less 5%, rather quiet.

ACID, FORMIC.—Supplies are becoming increasingly short with price firm at about £46 per ton. The brisk demand continues.

ACID, OXALIC.—Firm at £42/43 per ton and in good demand.

ALUMINA SULPHATE.—Firm at £8 10s. to £9 10s. per ton.

ARSENIC.—Remains in short supply and is nominally quoted for Cornish White Powder at £23 10s. per ton f.o.r. Mines, and Continental about £25 per ton c.i.f. U.K. Port.

BARIUM CHLORIDE.—Firm at £11 to £11 10s. per ton, with a good demand.

CREAM OF TARTAR.—86s. 6d. to 89s. 6d. per cwt., less 2½%, with a fair demand.

FORMALDEHYDE.—Firm at £27/28 per ton with an increasing demand.

LEAD ACETATE.—In good request—White at £37/39 per ton, Brown £1 per ton less.

LITHOPHONE.—Firm at about £22 per ton.

BICHROMATE OF POTASH.—In good demand and firm at 4¼d. per lb.

POTASH CHLORATE.—£32/34 per ton and in good demand.

PERMANGANATE OF POTASH NEEDLE CRYSTALS B.P.—7d. lb. with a fair demand.

POTASH PRUSSIATE.—Firm at about 8½d. per lb., and still in short supply.

SODIUM BICHROMATE.—In daily demand at 3½d. per lb.

SODIUM CHLORATE.—Very firm at £28 32 per ton.

SODIUM NITRATE.—In good steady demand at £20 22 per ton.

ZINC SULPHATE.—Firm at about £11 12 per ton.

Coal Tar Products

THE market for coal tar products remains quiet, and prices are unchanged from last week.

MOTOR BENZOL.—Quoted at about 1s. 4½d. to 1s. 5½d. per gallon f.o.r.

SOLVENT NAPHTHA.—Unchanged, at about 1s. 1½d. to 1s. 2d. per gallon f.o.r.

HEAVY NAPHTHA.—Remains at about 11d. to 1s. 0½d. per gallon f.o.r.

CREOSOTE OIL.—Obtainable at about 3d. to 3½d. per gallon f.o.r. in the North, and at about 4d. to 4½d. per gallon in London.

CRESYLIC ACID.—Quoted at about 1s. 6d. per gallon f.o.r. for the 98/100% quality, and at about 1s. 4d. per gallon for the Dark quality 95/97%.

NAPHTHALENES.—Unchanged, at about £2 5s. to £2 10s. per ton for the firelighter quality, at about £2 15s. to £3 per ton for the 74 76 quality, and at about £4 per ton for the 76/78 quality.

PITCH.—Quoted at about 60s. per ton, f.o.b. East Coast port.

Latest Oil Prices

LONDON, November 4.—LINSEED OIL was steady. Spot, ex mill, £18 15s.; November, £16 2s. 6d.; December, £16 12s. 6d.; January-April, £17 12s. 6d.; May-August, £18 12s. 6d., naked. RAPE OIL was steady. Crude, extracted, £30 10s.; technical refined, £32 10s., naked, ex wharf. COTTON OIL was steady. Egyptian crude, £22 10s.; refined common edible, £26 10s.; and deodorised £28 10s., naked, ex mill. TURPENTINE was steady. American, spot, 45s. per cwt.

HULL.—LINSEED OIL.—Spot and November closed at £17 2s. 6d.; December at £17 5s.; January-April at £17 10s.; and May-August at £18 10s., naked. COTTON OIL.—Bombay, crude, spot, not quoted; Egyptian, crude, spot, £22 10s.; edible, refined, spot, £25; technical, spot, £24 15s.; deodorised, £27, naked. PALM KERNEL OIL.—Crude, f.m.q., spot, £23 10s., naked. GROUNDNUT OIL.—Crushed-extracted, spot, £30 10s.; deodorised £34 10s. RAPE OIL.—Crushed-extracted, spot, £29 10s.; refined, £31 10s. SOYA OIL.—Crushed-extracted, spot, £20 10s.; deodorised, £24 per ton. COD OIL, 17s. per cwt. TURPENTINE.—American, spot, 49s. per cwt. CASTOR OIL.—Pharmacy, spot, 48s. 6d.; first, 43s. 6d.; second, 41s. 6d. per cwt.

Nitrogen Fertilisers

SULPHATE OF AMMONIA.—*Export.*—During the week the business transacted has been small and the price has remained unchanged at about £5 5s. per ton f.o.b. U.K. port in single bags. *Home.*—Prices remain unchanged. Business for prompt delivery is always small at this time of year. It is understood that merchants and farmers are still purchasing for delivery in the Spring.

IMPORTED NITRATE OF SODA.—The prices of this product have been announced as follows:—£8 10s. for November delivery; £8 12s. for December delivery; £8 14s. for January delivery; £8 16s. for February/June delivery; delivered to farmers' station in 6-ton lots, packed in single bags gross for nett.

BRITISH NITRATE OF SODA.—We understand that this is now available at the same range of prices as the imported product.

NITRO-CHALK.—The price remains unchanged at £7 5s. for delivery any time up to June 30th next in 1 cwt. bags.

South Wales By-Products

SOUTH WALES by-product activities continue to be of an uncertain and sporadic character. The demand for pitch has strengthened consequent upon a better call for patent fuel, but the demand is not so good as was expected a few weeks ago. The patent fuel outlook, however, is brighter than it has been for some time, and the pitch demand is therefore likely to improve before many weeks have passed. The call for road tar is very moderate, with values unchanged round about 13s. to 13s. 6d. per 40-gallon barrel delivered. Refined tars have a fair and steady call, with quotations for coke-oven and gas-works tar unchanged. Naphthas continue to have a dull market. Heavy has practically no demand, while the call for solvent is less than moderate. Creosote is weak, but motor benzol continues to be a good feature. Patent fuel prices, for export, are:—19s. to 19s. 6d., ex-ship Cardiff; 18s. to 18s. 6d., ex-ship Swansea. Coke prices are:—Best foundry, 32s. 6d. to 36s. 6d.; good foundry, 22s. 6d. to 25s.; furnace, 15s. to 17s. 6d.

Scottish Coal Tar Products

A FAIR volume of business has been placed during the week for prompt delivery but forward business is difficult on account of the uncertainty of the position. In most cases distillers expect to obtain higher prices, but, on the other hand, buyers are taking into account the fact that supplies of crude tar are likely to be more plentiful.

CRESYLIC ACID.—Little or no change can be recorded in this product. Pale, 99/100 per cent., 1s. 5d. to 1s. 6d. per gallon; pale, 97 99 per cent., 1s. 3d. to 1s. 4d. per gallon; dark, 97/99 per cent., 1s. 2d. to 1s. 3d. per gallon; all f.o.r. naked. High Boiling remains firm at 2s. 9d. to 3s. 3d. per gallon.

CARBOLIC SIXTIES.—Some export enquiries are on the market for delivery over 1932. Value is firmer at 1s. 6d. to 1s. 7d. per gallon according to water content.

CREOSOTE OIL.—Quotations are steady as follows:—Specification ils. 2¼d. to 3d. per gallon; washed oil, 3¼d. to 3½d. per gallon; gas works ordinary, 3½d. to 3¾d. per gallon; all f.o.r. makers' works in bulk.

COAL TAR PITCH.—Supplies are only obtainable in small quantities. Export price is nominal at 55s. to 60s. per ton f.o.b. Glasgow. The home price is unchanged at 55s. to 57s. 6d. per ton ex makers' works in bulk.

BLAST FURNACE PITCH.—Controlled prices have been further increased to 40s. per ton f.o.r. works, and 45s. per ton f.a.s. Glasgow for export.

REEINED COAL TAR.—Distillers are not quoting for forward business and value to-day is firmer at 3½d. to 4d. per gallon ex works in buyers' packages.

BLAST FURNACE TAR.—Nominal at 2¾d. per gallon f.o.r.

WATER WHITE PRODUCTS.—Very little interest is being taken in this department. Motor Benzole, 1s. 3½d. to 1s. 4½d. per gallon; 90/160 Solvent, 1s. 2½d. to 1s. 3½d. per gallon; and 90/190 Heavy Solvent, 1s. 0½d. to 1s. 1½d. per gallon; all f.o.r. in buyers' rail tanks.

New Branston Artificial Silk Scheme

IN July last, shareholders of the Branston Artificial Silk Co., Ltd., of which MR. MARTIN COLES HARMAN is chairman, were acquainted with a scheme for the reconstruction of the company by the formation of Branston, Ltd., in which shareholders were to receive partly-paid shares, the balance of 3s. per £1 share being payable by 6d. instalments, a step necessitated by the appointment of a receiver by the Alliance Assurance Co., Ltd., which company was a creditor for approximately £55,000. A circular issued to shareholders now states that with a view to restarting operations it is proposed to issue a debenture to repay this amount, and shareholders are to be given the opportunity to subscribe for the issue.

Scottish Chemical Market

The following notes on the Scottish Chemical Market are specially supplied to THE CHEMICAL AGE *by Messrs. Chas. Tennant and Co., Ltd., Glasgow, and may be accepted as representing this firm's independent and impartial opinions.*

Glasgow, November 5, 1931.

BUSINESS in the Scottish heavy chemical market shows material improvement and export inquiries continue to be brisk.

ACETONE.—B.G.S.—£61 to £63 per ton, ex wharf, according to quantity.

ACID, ACETIC.—Prices ruling are as follows: glacial, 98/100%, £47 to £58 per ton; pure, £37 5s. per ton; technical, 80%, £36 5s., delivered in minimum lots of 1 ton.

ACID, BORIC.—Granulated commercial, £25 per ton; crystals, £26 per ton; B.P. crystals, £34 per ton; B.P. powder, £35 per ton, in 1-cwt. bags, delivered Great Britain free in one-ton lots upwards.

ACID, HYDROCHLORIC.—Usual steady demand. Arsenical quality, 4s. per carboy. Dearsenicated quality, 5s. per carboy, ex works, full wagon loads.

ACID, NITRIC, 80° QUALITY.—£23 per ton, ex station, full truck loads.

ACID, OXALIC.—98/100%.—On offer at £42 to £43 per ton, ex store.

ACID, SULPHURIC.—£3 7s. 6d. per ton, ex works, for 144° quality. £5 15s. per ton for 168°. Dearsenicated quality, 20s. per ton extra.

ACID, TARTARIC, B.P. CRYSTALS.—Quoted 11d. per lb., less 5%, ex wharf.

ALUMINA SULPHATE.—Quoted round about £8 10s. per ton, ex store.

ALUM, LUMP POTASH.—Now quoted £8 10s. per ton, c.i.f. U.K. ports. Crystal meal, about 2s. 6d. per ton less.

AMMONIA ANHYDROUS.—Quoted 10½d. per lb., containers extra and returnable.

AMMONIA CARBONATE.—Lump quality quoted £36 per ton. Powdered, £38 per ton, packed in 5 cwt. casks, delivered U.K. stations or f.o.b. U.K. ports.

AMMONIA LIQUID, 80°.—Unchanged at about 2½d. to 3d. per lb., delivered, according to quantity.

AMMONIA MURIATE.—Grey galvanisers' crystals of British manufacture quoted £21 to £22 per ton, ex station.

ANTIMONY OXIDE.—Spot material obtainable at round about £36 per ton, ex wharf.

ARSENIC, WHITE POWDERED.—Quoted £25 10s. per ton, ex wharf. Spot material still on offer at £26 per ton, ex store.

BARIUM CHLORIDE.—In good demand and price about £10 10s. to £11 10s. per ton, c.i.f. U.K. ports.

BLEACHING POWDER.—British manufacturers' contract price to consumers unchanged at £6 15s. per ton, delivered in minimum 4-ton lots.

CALCIUM CHLORIDE.—Remains unchanged. British manufacturers' price, £4 15s. to £5 5s. per ton, according to quantity and point of delivery.

COPPERAS, GREEN.—At about £3 15s. per ton, f.o.r works, or £4 12s. 6d. per ton, fo.b. U.K. ports.

FORMALDEHYDE, 40%.—Now quoted £29 per ton, ex store.

GLAUBER SALTS.—English material quoted £4 10s. per ton, ex station.

LEAD, RED.—Price now £30 per ton, delivered buyer's works.

LEAD, WHITE.—Quoted £38 per ton, carriage paid.

LEAD ACETATE.—White crystals quoted round about £42 to £44 per ton c.i.f. U.K. ports. Brown on offer at about £1 jer ton less.

MAGNESITE, GROUND CALCINED.—Quoted £9 10s. per ton, ex store.

METHYLATED SPIRIT.—Industrial quality 64 o.p., quoted 2s. per gallon, less 2½% delivered.

POTASSIUM BICHROMATE.—Quoted 4¼d. per lb., delivered U.K. or c.i.f. Irish ports, with an allowance for contracts.

POTASSIUM CARBONATE.—Spot material on offer, £27 per ton ex store.

POTASSIUM CHLORATE.—99¾/100% Powder.—Quoted £34 per ton ex store; crystals 30s. per ton extra.

POTASSIUM NITRATE.—Refined granulated quality quoted £20 17s. 6d. per ton, c.i.f. U.K. ports. Spot material on offer at about £20 10s. per ton ex store.

POTASSIUJ PERMANGANATE B.P. CRYSTALS.—Quoted 6½d. per lb. ex wharf.

POTASSIUM PRUSSIATE (YELLOW).—Spot material quoted 8d. per lb., ex store.

SODA, CAUSTIC.—Powdered 98/99%, £17 10s. per ton in drums, £18 15s. in casks. Solid 76/77%, £14 10s. per ton in drums, £14 12s. 6d. per ton for 70/72% in drums; all carriage paid buyer's station, minimum four-toun lots; for contracts 10s. per ton less.

SODIUM BICARBONATE.—Refined recrystallised, £10 10s. per ton, ex quay or station. M.W. quality 30s. per ton less.

SODIUM BICHROMATE.—Quoted 3¾d. per lb., delivered buyer's premises, with concession for contracts.

SODIUM CARBONATE (SODA CRYSTALS).—£5 to £5 5s. per ton, ex quay or station; powdered or pea quality, 7s. 6d. per ton extra. Light soda ash, £7 13s. per ton, ex quay, minimum four-ton lots, with various reductions for contracts.

SODIUM HYPOSULPHITE.—Large crystals of English manufacture quoted £9 2s. 6d. per ton, ex station, minimum four-ton lots. Pea crystals on offer at £15 per ton, ex station, minimum four-ton lots.

SODIUM NITRATE.—Price not yet fixed.

SODIUM PRUSSIATE.—Quoted 5¼d. per lb., ex store. On offer at 5d. per lb., ex wharf to come forward.

SODIUM SULPHATE (SALTCAKE).—Price, 60s. per ton, ex works; 65s. per ton, delivered, for unground quality. Ground quality 2s. 6d. per ton extra.

SODIUM SULPHIDE.—Prices for home consumption: solid 61/62%, £10 per ton; broken, 60/62%, £11 per ton; crystals 30/32%, £8 2s. 6d. per ton, delivered buyer's works on contract, minimum four-ton lots. Special prices for some consumers. Spot material 5s. per ton extra.

SULPHUR.—Flowers, £12 per ton; roll, £10 10s. per ton; rock, £9 5s. per ton; ground American, £8 10s. per ton, ex store.

ZINC CHLORIDE 98%.—British material now offered at round about £18 10s. per ton, f.o.b. U.K. ports.

ZINC SULPHATE.—Quoted £11 per ton, ex wharf.

NOTE.—The above prices are for bulk business and are not to be taken as applicable to small parcels.

Late International Nitrogen Convention

Finance Committee to be Maintained

THE Finance Committee of the late International Convention met in Paris on Tuesday and Wednesday, October 27 and 28, to deal with certain questions arising out of the accounts of last season. As it will be some time before the final accounts can be presented, and as, moreover, most of the members of the Committee are shareholders in the International Nitrogen Co. of Basle, which was formed at the same time as the C.I.A., it was agreed to keep the committee in being. The feeling at the meeting was that the present was not an opportune moment to attempt to rebuild the cartel.

Bulgarian Exchange Restrictions

AN Ordinance of the National Bank of Bulgaria was published in the official Gazette of October 21 providing for the restriction and control of operations in foreign currency. The regulation whereby three months' notice is to be given where foreign currency is required for the payment of imported goods, only applies in respect of goods ordered after the publication of the ordinance. At present, however, considerable delay is being experienced in obtaining sterling for transactions already completed.

Scientific Advisory Committee for United Dairies

IN the course of his speech at the sixteenth annual general meeting of United Dairies, Ltd., held on Friday, October 30, at the Connaught Rooms, London, Mr. Joseph H. Maggs (chairman and managing director) referred to notable developments on the scientific and research side of the business. He said that the Company has set up a Scientific Advisory Committee, and have been successful in enlisting the services of four well-known scientists, each of whom in his own field is an authority on some subject intimately connected with the milk industry. The first task of this committee, which has already visited most of the United Dairies plants, will be to co-ordinate the activities of the already existing laboratory staffs and to standardise the methods of scientific control used throughout the business. As soon as this task has been accomplished a co-ordinated scheme of research dealing with problems of immediate interest to the dairy industry will be initiated and will be carried out partly in the Company's own laboratories and partly in laboratories connected with certain academic institutions which offer better facilities for certain types of research work. Finally, after the more immediate and pressing needs of the industry have been met, it is hoped to investigate certain fundamental research problems, without which no real progress in the future can be hoped for.

Manchester Chemical Market

[From Our Own Correspondent.]

Manchester, November 4, 1931.

The recent spectacular features of the chemical market in this area seem now to have disappeared, and traders report that business is proceeding more or less on humdrum lines. Tariff possibilities are creating a certain amount of inquiry in connection with imported materials, but not much in the way of actual business in this respect has been reported during the past week. A satisfactory feature of the situation is that at the moment a bigger volume of chemicals in the aggregate is going into consumption in this part of the country than at any time previously during the past year, and fair deliveries are being taken against contracts already placed, with prompt buying on moderate lines.

Heavy Chemicals

Bichromate of soda is nominally unchanged on the week, current offers being at about 3½d. per lb., a quietly steady trade in this section being put through. There is not a great deal of business being done just now in the case of sulphide of sodium, but values are well held at about £8 per ton for the commercial quality and £10 10s. for the 60-65 per cent. concentrated solid. Prussiate of soda meets with a moderate amount of inquiry and quotations are firm at from 4¾d to 5¼d. per lb., according to quantity. A quiet demand is reported in respect of hyposulphite of soda, with offers of the photographic quality maintained at from £15 to £15 10s. per ton and of the commercial grade at round £9 5s. Bicarbonate of soda is steady and in fair request at about £10 10s. per ton, with alkali in a like position at round £6 per ton, both in contracts. A moderate business is offering in the case of chlorate of soda, which is somewhat firmer on balance at from £31 to £32 per ton. With regard to caustic soda, there is a steady call for this and quotations are very firm on the basis of £12 15s. to £14 per ton, according to quality, and in contracts. In the neighbourhood of £12 10s. per ton has been asked during the past week for the dibasic quality of phosphate of soda, but bookings in this section of the market had been of limited extent.

Caustic potash keeps fairly steady at about the higher levels recently recorded, values this week ranging from about £37 to £38 per ton. There is a moderate inquiry about for carbonate of potash which continues firm at £28 10s. per ton. The demand for permanganate of potash is still relatively poor but prices of this material keep up at about 6½d. per lb. for the B.P. grade, and from 6d. to 6¼d. for the commercial quality. Chlorate of potash meets with a quietly steady call and offers are quite firm at up to £35 per ton. Yellow prussiate of potash is a strong section at round 8½d. per lb., with buying interest on moderate lines. Bichromate of potash is in fair request and values are well held at about 5½d. per lb.

Among the miscellaneous products, a quiet trade is passing in the case of sulphate of copper which is quoted at round £18 per ton, f.o.b. Arsenic is in moderate request, with white powdered Cornish makes scarce and largely nominal at £25 10s. per ton, at the mines, and foreign arsenic at £23 to £24 per ton. No more than a quiet demand is about for the lead compounds, although at about £29 per ton for nitrate and £33 10s. and £34 10s. for white and brown acetate quotations keep up. Interest in the acetates of lime is slow and values are not too strong, the grey quality being on offer at about £11 per ton and brown at £7 5s.

Acids and Tar Products

Citric acid meets with a moderate amount of inquiry with offers maintained at 1s. 1½d. per lb., tartaric being in quiet demand at 1s. 0¾d. per lb. Oxalic acid is firmer at about £2 3s. per cwt., ex store, but business is no brisker than before. Acetic acid is in fair demand and prices are firm at £51 per ton for the technical glacial quality and £38 5s. for the 80 per cent. commercial.

Prompt supplies of pitch continue to be readily taken up and values are extremely firm at about 62s. 6d. to 65s. per ton, f.o.b. Creosote oil is steady at from 3½d. to 4½d. per gallon, naked, according to quality, but sales are only moderate. Crude carbolic acid is firm at round 1s. 6d. per gallon, naked, and crystals at 5¾d. to 6d. per lb., f.o.b.

Company News

Anglo-French Phosphate Co.—The report for the year ended December 31, 1930, shows that the net profit was £33,205 (against £38,918). The directors recommend a dividend of 8 per cent. for the year (previous year 15 per cent. and 5 per cent. bonus), carrying forward £24,016 (£5,811). The annual meeting will be held at Norwich House, London, W.C.1, on November 18, at 12 noon.

British Match Corporation.—An interim dividend of 2 per cent. actual, free of tax, on the ordinary shares, the same as last year, is announced by the directors. Last years interim was followed by a final of 4 per cent., free of tax, making 6 per cent., free of tax, for the year.

North British Artificial Silk Co.—The accounts for the year ended June 30 last show a loss of £19,398. No depreciation has been charged. In their report the directors intimate that they will shortly submit proposals for dealing with the debit balance of profit and loss account, depreciation, the development account, and certain other items in the balance-sheet. The annual meeting will be held at Kingsway Hall, Kingsway, London, W.C., on November 12, at 12 noon.

Spies Petroleum Co.—The profit and loss account for the year to August 31 last shows excess of expenditure over income of £3,716, which is deducted from reorganisation reserve, leaving £215,660.

"Shell" Transport and Trading Co., Ltd., and Royal Dutch Co.—The directors have announced that no interim dividend will be paid. Last year both companies paid interims of 10 per cent., while the total distribution in the case of "Shell" was 17½ per cent., tax free (against 25 per cent. in 1929), and in the case of Royal Dutch, 17 per cent. (against 24 per cent.).

British Celanese, Ltd.

Dr. Henry Dreyfus on the Question of Tariffs

The twelfth ordinary general meeting of British Celanese, Ltd., was held at the Cannon Street Hotel, London, on Friday, October 30, Dr. Henry Dreyfus (chairman and managing director) presiding.

In the course of his speech the Chairman said the position of the company in the artificial silk industry in this country is absolutely secure, and is being maintained by the manifold developments which are taking place in every possible direction, in particular in regard to cost price and quality. Expectations of a further increase in business are supported by the fact that new products have been developed, and in the company's opinion, these new products, which are protected by patents, will in themselves command a large sale, so that they may contribute very substantially to consolidating the general sales position. Dealing with the anomalies of the present import duties, he pointed out that the silk duties are not fully effective, owing to the law being rigid and not flexible. In consequence, a large quantity of goods is still coming into this country. The imposition of a tariff would remedy this deficiency, but it is important that the tariff law should be so worded that in the event of foreign manufacturers finding ways and means of circumventing the law as it stands, such laws will be flexible. In the event of such laws not being made flexible, dumping goods at cheap rates will continue. The protection of the artificial silk industry should apply to the textile industry in general, subject to the modifications required for each particular branch. If the duties or tariffs were arranged on this principle they would be most effective and no loopholes would be possible.

Concerning the patent position, the Chairman said that the company was watching the position of all those companies who had infringed or were intending to infringe their patents. Having collected over a considerable period all the data required to furnish evidence for actions, and therefore knowing in principle the processes and plants adopted by these various companies so far as they have been operating or are still operating, they had started infringement actions against five firms, of whom only two are still operating so far as their knowledge goes. Some of the non-operating firms have since gone into liquidation.

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ILLUSTRATION SHOWS PART OF THE HYDROCHLORIC ACID PLANT.

Commercial Intelligence

The following are taken from printed reports, but we cannot be responsible for any errors that may occur.

County Court Judgment

[NOTE.—The publication of extracts from the "Registry of County Court Judgments" does not imply inability to pay on the part of the persons named. Many of the judgments may have been settled between the parties or paid. Registered judgments are not necessarily for debts. They may be for damages or otherwise, and the result of bona-fide contested actions. But the Registry makes no distinction of the cases. Judgments are not returned to the Registry if satisfied in the Court books within twenty-one days. When a debtor has made arrangements with his creditors we do not report subsequent County Court judgments against him.]

STANSFIELD, JNO, 17 Woodlands Street, Cheetham Hill, Manchester, chemical merchant. (C.C., 7/11/31.) £18 12s. 9d., September 30.

Mortgages and Charges

*[NOTE.—The Companies Consolidation Act of 1908 provides that every Mortgage or Charge, as described therein, shall be registered within 21 days after its creation, otherwise it shall be void against the liquidator and any creditor. The Act also provides that every Company shall, in making its Annual Summary, specify the total amount of debts due from the Company in respect of all Mortgages or Charges. The following Mortgages and Charges have been so registered. In each case the total debt, as specified in the last available Annual Summary, is also given—marked with an *—followed by the date of the Summary, but such total may have been reduced.]*

SPLINTEX SAFETY GLASS, LTD., London, S.W. (M., 7/11/31.) Registered October 22, £3,000 Land Registry 2nd charge (not ex.), to Lloyds Bank, Ltd.; charged on land and factory at Morden Road, Merton. *£18,000. October 17, 1930.

UTOL, LTD., London, E.C., chemical manufacturers. (M., 7/11/31.)—Registered October 22, series of £5,000 debentures present issue £1,800; general charge.

Satisfaction

MACDONALD (R. F.) AND CO. (CHEMICAL MANUFACTURERS), LTD., Manchester. (M.S., 7/11/31.)—Satisfaction registered October 24, £1,000 (not ex.), registered July 10, 1931.

London Gazette, &c.

Winding-Up Petition

BRITISH NETHERLANDS ARTIFICIAL SILK CO., LTD. (W.U.P., 7/11/31.)—A petition for the winding-up of this company by the High Court of Justice was on July 24 presented by Johan Detmar Willem Hubbeling, of Apeldoorn, Vanheutglaan 21, Holland, and is to be heard before the Royal Courts of Justice, Strand, London, on November 9.

New Companies Registered

STANDARD WATERPROOF PRODUCTS, LTD., 100 Salkeld Street, Glasgow, C.5.—Registered in Edinburgh on October 24. Nominal capital £1,000 in £1 shares. Chemical manufacturers, manufacturers of all kinds of paints, varnishes, waterproofing, etc. Directors:—R. Hunter, J. Hunter, G. Wight, J. L. Blair.

CELLULOSE AND PULP MANUFACTURERS, LTD., 14 Regent Street, London, S.W.1.—Registered as a public company on October 30. Nominal capital £120,000 in £1 shares. To acquire the property of the La Cellulose du Massif Central and the goodwill thereof, and to carry on the business of manufacturers of and dealers in papers and pulp, paper pulp and cellulose, etc. Directors:—J. M. Andracle, J. B. Bordas, P. E. de Vaublanc.

JOSEPH CROWTHER (CHEMICALS), LTD., Morley Lane, Milnsbridge, near Huddersfield.—Registered October 28. Nominal capital £1,000 in £1 shares. To acquire the business of a chemical manufacturer formerly carried on by J. Crowther at Morley Lane, Milnsbridge, Huddersfield, and to carry on the same and the business of coal tar, wood and gas distillers, manufacturing chemists, druggists, drysalters, etc. Directors:—W. Crowther, P. Crowther, F. Crowther, J. Crowther.

New Chemical Trade Marks

These lists are specially compiled for us from official sources by Gee and Co., Patent and Trade Mark Agents, Staple House, 51 and 52 Chancery Lane, London, W.C.2, from whom further information may be obtained, and to whom we have arranged to refer any inquiries relating to Patents, Trade Marks and Designs.

Opposition to the Registration of the following Trade Marks can be lodged up to November 28, 1931.

CELLENAM.

525,804. Class 1.—Cellulose lacquers. British Cellulose Lacquers, Ltd., 5 Marshgate Lane, Stratford, London, E.15; manufacturers.—September 18, 1931. (By Consent).

SPARTOL.

524,747. Class 1.—Fluid preparations for the prevention or removal of boiler scale. William Dymond, trading as "Spartol" Boiler Fluid Manufacturing Co., "Elmleigh," Millbrook Road, Millbrook, Southampton; Manchester.—July 31, 1931.

EUKANOL.

524,955. Class 1.—Chemical substances used in manufactures, photography, or philosophical research, and anti-corrosives. I. G. Farbenindustrie Aktien-Gesellschaft, (a Joint Stock Company organised according to the laws of Germany), Mainzer-Landstrasse 28, Frankfort-on-Main, Germany; manufacturers.—August 13, 1931.

DIGIRAMINE.

520,184. Class 3.—Chemical substances prepared for use in medicine and pharmacy. Society of Chemical Industry in Basle, (a Joint Stock Company organised under the laws of Switzerland), 141-227 Klybeckstrasse, Basle, Switzerland; manufacturers and merchants.—February 7, 1931.

Chemical Trade Inquiries

These inquiries, abstracted from the "Board of Trade Journal," have been received at the Department of Overseas Trade (Development and Intelligence), 35 Old Queen Street, London, S.W.1. British firms may obtain the names and addresses of the inquirers by applying to the Department (quoting the reference number and country) except where otherwise stated.

AUSTRALIA.—The Victorian Railways Commissioners are calling for tenders (Contract No. 44,722), to be presented in Melbourne by November 25, 1931, for the supply of 10 tons of sodium acetate (commercial). (Ref. F.X. 1316.)

CANADA.—H. M. Senior Trade Commissioner at Montreal reports that a local authority desires to receive full particulars of chlorine control plant.—(Ref. G.X. 10873.)

Tariff Changes

ARGENTINA.—The rates of duty on lithopone has been reduced from 25 (32) per cent. to 15 (17) per cent. of the official valuation of 32 cts. (gold) per kilog.

AUSTRIA.—A Law, dated October 3, published in the *Bundesgesetzblatt*, October 4, provides for the increase, from 13 to 30 groschen per kilog. net weight, of the consumption tax on benzine used for any purpose, and on other volatile inflammable liquids (benzole, kerosene, gas oil, petroleum, but not alcohol) suitable for use as, and used for, fuel for road vehicles propelled by internal combustion engines.

ROUMANIA.—A Royal Decree of October 3, effective as from October 8, abolishes the export duties on certain goods exported from Roumania. The goods affected include carbide, glue ((made of bones, etc.), raw casein, malt and germinating malt, charcoal, coal (exported under licence), chalk, glucose, cement, lignite, lime and hydraulic lime; hardened casein and molasses unfit for food.

Key Industries Duty

Proposed Exemption of Phloroglucine

A REPRESENTATION has been made to the Board of Trade under Section 10 (5) of the Finance Act, 1926, regarding the exemption of phloroglucine from the duty imposed by Section 1 of the Safeguarding of Industries Act, 1921. Any communications should be addressed to Principal Assistant Secretary, Industries and Manufacturers Department, Board of Trade, Great George Street, S.W.1, within one month from November 4.